

DASCOM

Tally®

User Guide

1500 Matrix Printer



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Introduction

Congratulations on purchasing the Matrix Printer Tally Dascom 1500. The printer is equipped with a small printhead, which allows printing in draft mode and letter quality. The printer lends itself to a wide range of applications, accepting a variety of data from host computers. It caters to word processing functions with the high print quality and image processing with its ability to print bit image graphics.



Features

Key printer features and options are listed in the next two sections.

- **Software compatibility.** The printer operates with EPSON ESC/P2, IBM Proprinter X(L)24e emulations. For both emulations are OKI superset commands available.
- **Various character sets.** For IBM Mode: IBM Set 1 and Set 2. For EPSON Mode: 15 National Character Sets.
- **Multiple fonts.** The printer has eleven resident fonts: Draft, Roman, Sans Serif, Courier, OCR-B, OCR-A, Prestige, Script, Orator, Gothic, Souvenir.
- **High-speed printing.** The print speed is up to 500 characters per second.
- **Memory.** The printer is equipped with ROM and RAM memory: 16 MBit of ROM memory and 256 Kbytes of receiving buffer are available for storing input data and downloading custom fonts.
- **Simple switching of paper types.** The ability to “park” continuous forms to switch between continuous forms and single sheets.
- **Automatic tear-off advancing.** With factory settings of the Set-Up mode, continuous forms’ perforations are automatically advanced up to the tear bar at the end of each job so that forms can be torn off.
- **Maintenance-free.** The printer only requires periodic cleaning and changing of the ribbon cartridge.

Symbols used

Important information is highlighted in this manual by three symbols.



NOTE: *A note is a tip or extra information that may be helpful in installing or using the printer.*



CAUTION: *A caution message provides information that may help you avoid equipment damage, process failure, or inconvenience. Read all caution messages carefully.*



WARNING: *A warning message indicates the possibility of personal injury if a specific procedure is not performed exactly as described in the guide. Pay close attention to these sections and read them fully to prevent possible injury.*

Important safety instructions

Read the following instructions thoroughly before starting up your printer in order to prevent injuries and avoid damage to the device.

- Place the printer on a solid and even base so that it cannot fall down to the ground.
- Do not expose the printer to high temperatures or direct sunlight.
- Keep all liquids away from the printer.
- Protect the printer from shock, impact and vibration.
- Be sure to connect the printer to a socket with the correct mains voltage.
- Always disconnect the system from the mains before opening the device to perform maintenance work or remedy errors.
- Do not perform any operation or action in any way other than provided in this manual. When in doubt, contact your dealer or service company.
- Keep in mind that hazard warnings in this manual or on the printer cannot cover every possible case, as it is impossible to predict and evaluate all circumstances beforehand. Be alert and use your common sense.

Safety Precautions

This printer is available in two models, the 110 V model and the 230 V model. The specifications that apply to your printer depend on your machine configuration. To prevent fire or shock hazards, connect the power plug only to a properly rated power outlet.

Operating the printer

Overview

This chapter explains how to operate the printer. Topics covered are:

- Setting up your printer
- Getting to know the printer's major parts and the control panel
- Selecting paper
- Overview of paper operations
- Adjusting for paper thickness
- Using continuous forms
- Using single sheets
- Feeding and positioning paper
- Switching paper types

Setting up your printer

Unpacking the printer

Place your packaged printer on a solid base.

Make sure that the “Up” symbols point in the correct direction.

Open the packaging, lift the printer out of the cardboard box and remove the remaining packaging material.

Check the printer for any visible transport damage and missing items. The following items should be included:



If you find any transport damage or if any accessories are missing, please contact your dealer.

Placing the printer

Place the printer on a solid, flat, surface, ensuring that the printer is positioned in such a way that it can not topple, and that there is easy access to the control panel and paper input devices.

Also ensure that there is enough space for sufficient ventilation and for the printed output.

When selecting the printer location, observe the following additional instructions:



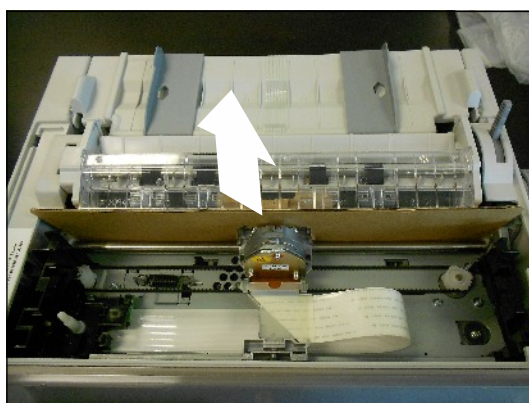
Never place the printer in the vicinity of inflammable gas or explosive substances.

- Do not expose the printer to direct sunlight. If you cannot avoid placing the printer near a window, protect it from the sunlight with a curtain.
- When connecting a computer to the printer, make sure not to exceed the maximum cable length (see “Interfaces” on page B-1).
- Ensure sufficient distance between the printer and any heating devices/radiators.
- Avoid exposing the printer to extreme temperature or air humidity fluctuations. Above all take care to avoid the influence of dust.
- It is recommended to install the printer in a place which is acoustically isolated from the workplace because of the noise it may produce.

Installation procedure



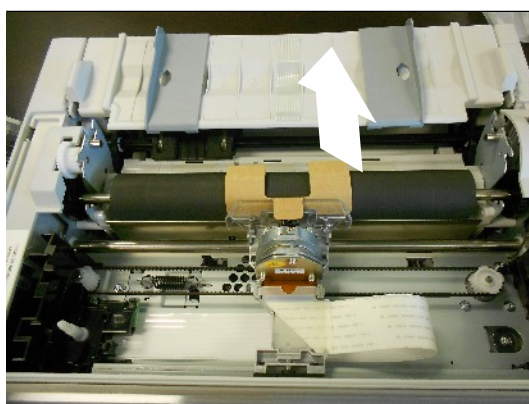
- 1 When the printer is first taken out of the packaging box, the cover of the printer is taped as shown in the diagram. Remove the tape.



- 2 Open the cover of the printer and remove the shipping locks.



Keep the packaging for future transportation.



Installing the ribbon cassette

Proceed as follows to install the ribbon cassette.

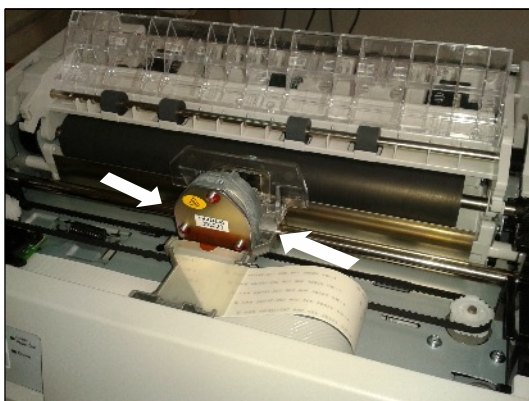


Only use ribbon cassettes from the manufacturer as products from other manufacturers may damage the printhead or the ribbon drive.

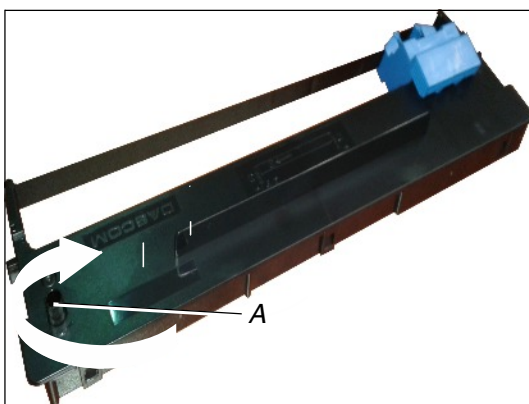


1 Remove the ribbon cassette from its packaging.

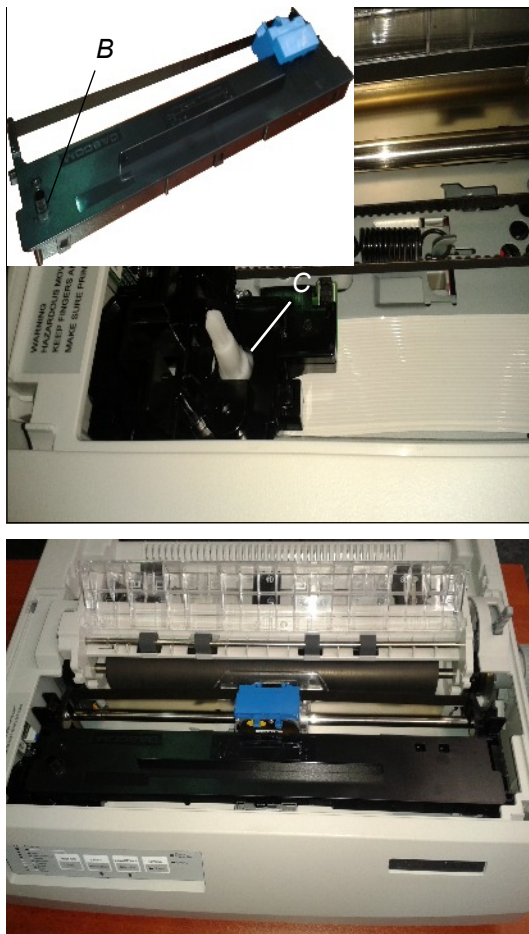
2 Open the printer cover.



3 Adjust the printhead to the center of the print roller.



4 Turn the tension knob **A** in the direction of the arrow in order to take up slack of the ribbon.



5 Insert the recess **B** on the bottom of the ribbon cassette into the holding pin **C** of the mounting.

6 Push the cassette into its mounting until it clicks into position.

7 Close the cover of the printer.

Connecting the printer

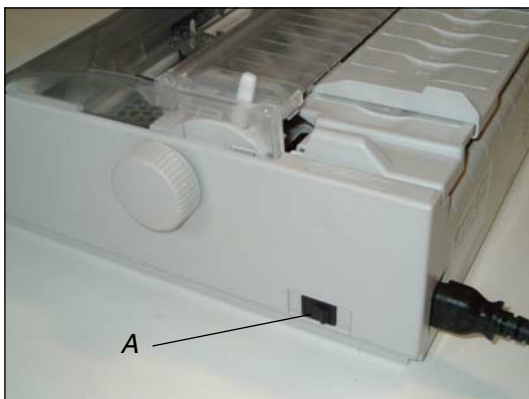
Checking the printer voltage

Make sure that the device has been set to the correct voltage (e.g. 120 V in the USA, 230 V in Europe). To do this, check the type plate at the back of the printer. Contact your dealer if the setting is incorrect.



Never switch on the printer if the voltage setting is incorrect, since this may result in severe damage.

Connecting the mains power



- 1 Make sure that the power switch **A**, located at the right side of the printer, is in the **Off** position.



- 2 Connect the power cable to the power inlet of the printer. Connect the power cable plug to a mains socket.

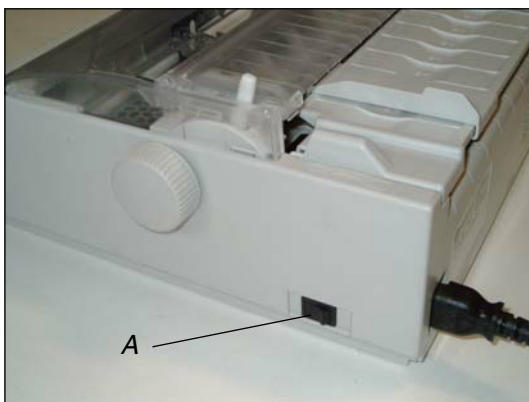
Connecting the interface cable

The printer by default is provided with a parallel Centronics interface and an USB interface. For further information about the interfaces, refer to Appendix B, “*Interfaces*” on page B-1.

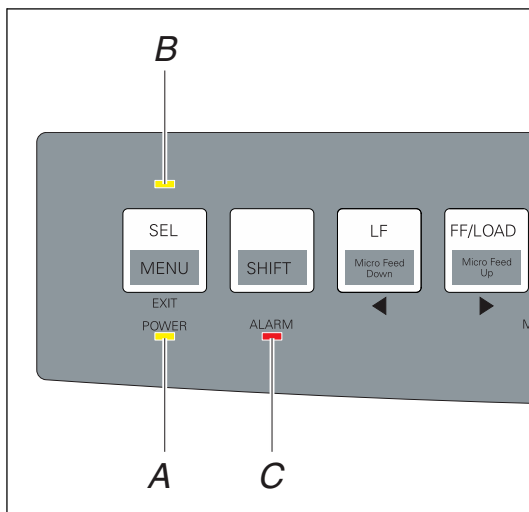


- 1** Make sure that the printer and the computer are switched off.
- 2** Connect the data cable between the printer and the computer, in this example a 36-pin centronics parallel cable.

Switching on the printer



Press the power switch **A** of the printer.
The printer initializes.



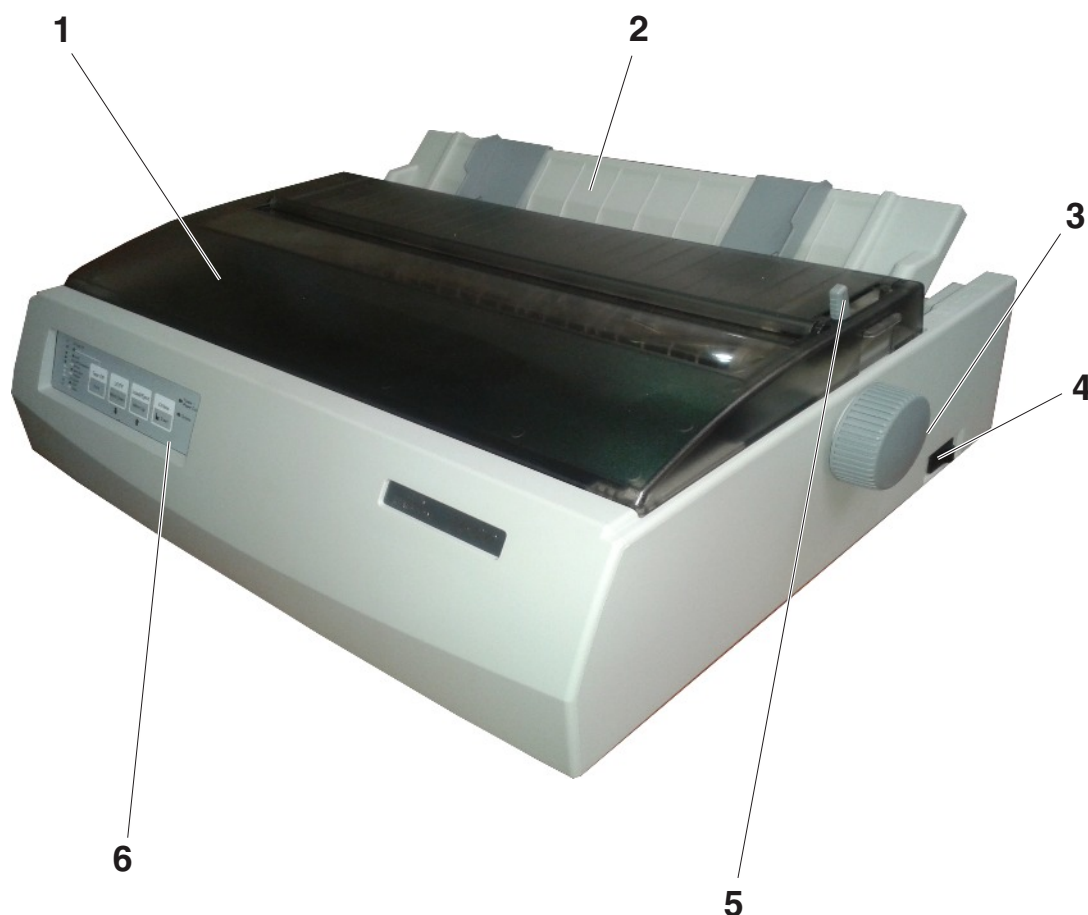
When the initialization is completed, the Power indicator **A** and the Ready indicator (SEL) **B** light up. If no paper has been loaded, the Alarm indicator **C** also lights. For more information on indicators, please refer to the section “*Operations of the Control Panel*” on page 2-12.

After loading paper, the printer is in the online status and ready to accept data from the system.

Printer components

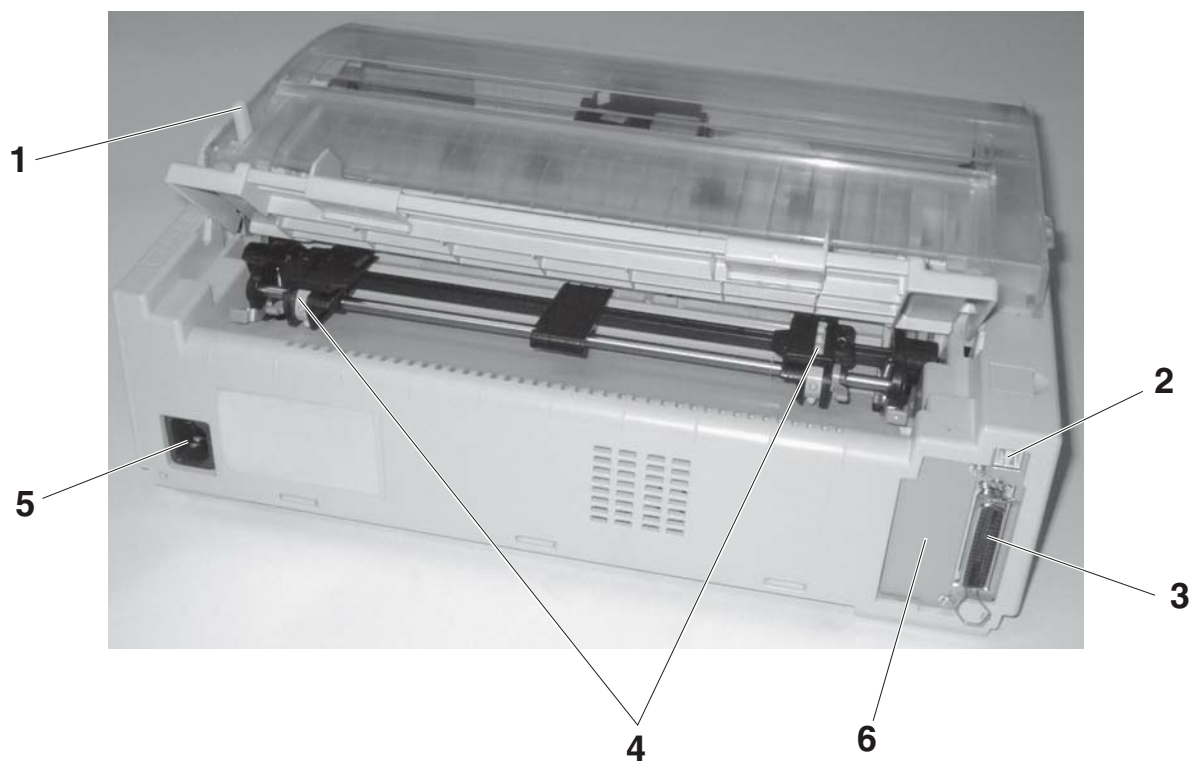
This section describes the major parts and controls of the printer and operations of the control panel. Take a moment to become familiar with the printer.

Front view



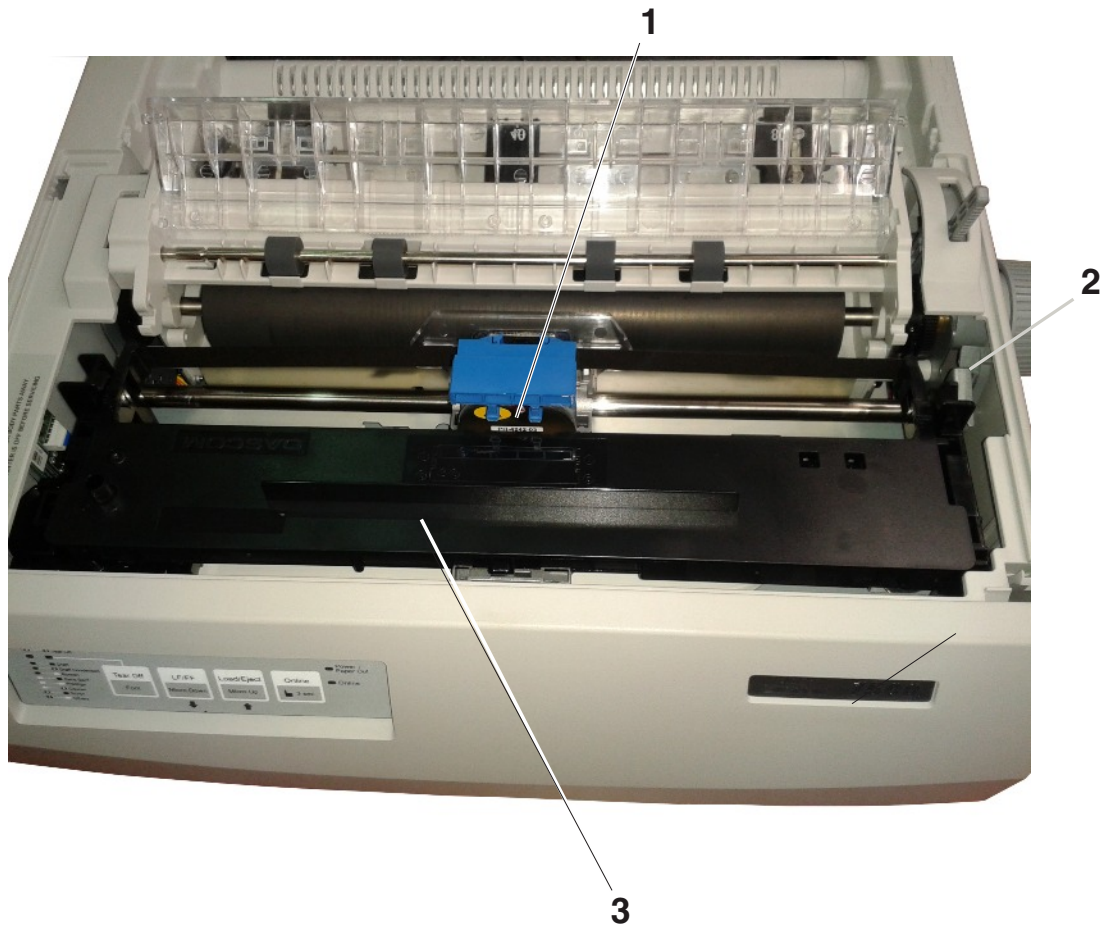
1	Cover
2	Single sheet feeder: to load single sheets.
3	Platen knob: to transport paper if the printer is powered off.
4	Power switch: Switches the power of the printer on and off. Pushing the switch to the <I> side switches it on and pushing it to the <O> side switches it off.
5	Paper select lever: to select the paper path.
6	Control panel: to load and feed paper, select print features, or change the printer's optional settings.

Rear view



1	Paper select lever: to select the paper path
2	USB interface: connect the USB cable here
3	Parallel interface: connect the parallel cable here
4	Tractor: to hold and feed continuous forms
5	Power inlet: Connect the power cord here
6	Space for optional interface

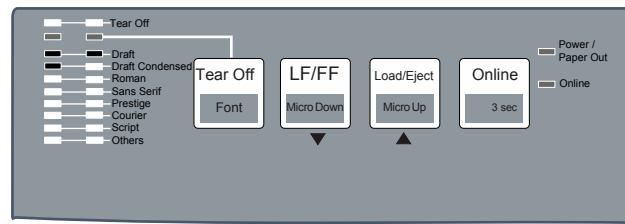
Internal view



1	Printhead
2	Paper thickness lever: to adjust the print gap for different paper thicknesses.
3	Ribbon cassette

Operations of the Control Panel

This section summarizes status indications and operations of the control panel in Normal mode. For details on Set-Up mode, see Chapter 4, “*Special mode*” on page 4-1.

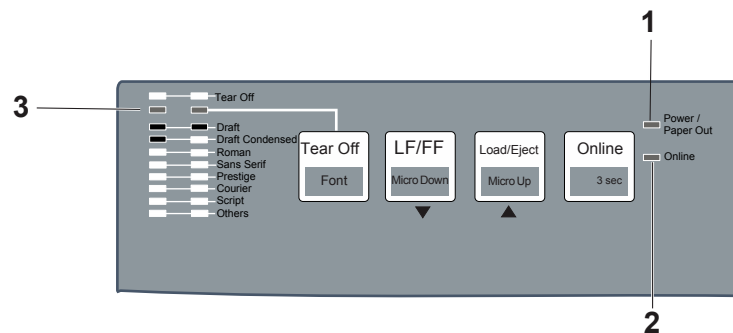


Panel Layout

Normal mode operation includes everyday operations, such as paper handling, font and character pitch selection.

LED indicators

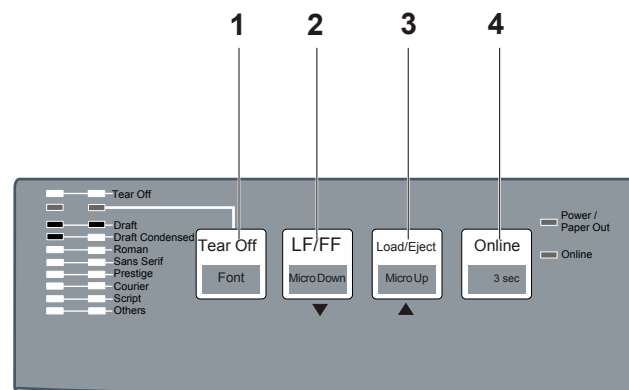
The LED lights of the control panel indicate the current status of the printer.



No.	LED	Status
1	POWER PAPER OUT	On: the printer is switched on. Off: the printer is switched off. Flashing: Paper out. Flashing + buzzer: Paper jam
2	ON LINE	On: the printer is in Online mode and ready to receive data from the computer. Off: the printer is in Offline mode and cannot receive data.
3	TEAR OFF FONT	When online, this key will move any loaded continuous paper to the tear-off position. When in setup state, this key is used to select the desired font.

Control panel keys

The control panel keys are used for controlling the printer operation. Key functions depend on printer status.



No.	Key	Function
1	TEAR OFF/FONT	When online, this key will move any loaded continuous paper to the tear-off position. When in setup state, this key is used to select the desired font.
2	LF/FF	Pressing this key will feed paper one line forward. By holding down this key, the printer will initially feed a few lines, then perform a form feed (continuous paper mode) or eject the form (single sheet mode). In the setup state, this key performs a reverse micro feed.
3	LOAD/EJECT	When paper is loaded, pressing this key will eject the paper (single sheet mode) or park the paper (continuous paper mode). When paper is not loaded, pressing this key will load the paper to the starting print position. In the setup state, this key performs a forward micro feed.
4	ONLINE / 3 sec	<p>This key switches the printer between online and offline states. Printing is stopped when the printer is switched to offline state. When printer is switched to online state again, printing will resume.</p> <p>When printer is offline, pressing it for 3 seconds or longer will enter the setup state. This is indicated by a beep sound and the flashing Online LED. By pressing the Online key again will exit the setup state back to offline state.</p>

Font selection

The printer can print with different fonts. The actual selected font type is displayed by its respective LED light.

If you want to change the font setting, press the TEAR OFF / Font key repeatedly until the desired font type is set.

The following fonts are available:

Font selection label	LED 1 state	LED 2 state
Draft	Off	Off
Draft condensed	Off	Flash
Roman	Off	On
SanSerif	On	Off
Prestige	On	On
Courier	On	Flash
Script	Flash	Off
Others	Flash	On

Paper handling

Paper types

The printer can handle either single sheets or continuous forms. Single sheets, also called cut sheets, include envelopes and non-continuous, multipart forms. Continuous forms include labels and multipart forms fed into the printer using the forms tractors.

For best results, use paper that meets the specifications listed in the following table. (See Appendix A, “*Paper specifications*” on page A-4 for detailed specifications.) If you are unsure of the suitability of a particular type of paper, try testing the paper or consult your dealer.

Paper Specifications

Paper Size

Width -- Cut Sheet	102 to 267 mm (4 to 10,5“)
Width -- Fanfold	102 to 267 mm (4 to 10,5“)
Length	102 up to 559 mm (4 to 22“)
Thickness	Up to 0.35 mm (0,014“)

Paper Thickness and Number of Copies

Thickness	0.35 mm (0.014 in) maximum total thickness.
Copies	1 to 4 copies, including the original. For carbon-inter-leaved paper, the carbon counts as a copy.

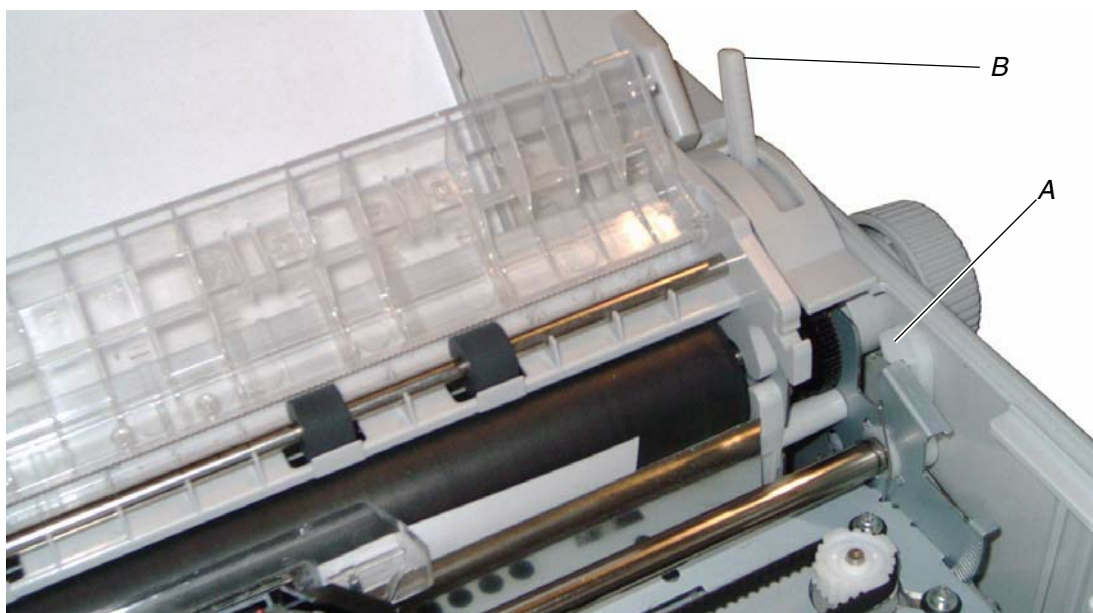
Loading paper

Your printer can process both fanfold paper and single sheets. For information on the supported paper sizes, please refer to the section “*Paper types*” on page 2-15 and to Appendix A, “*Paper specifications*” on page A-4.

Overview of Paper Operations

The following levers are used in paper handling.

- Print Gap lever **A** on the right side under the cover.
- Paper Select lever **B** on the right side of the cover.

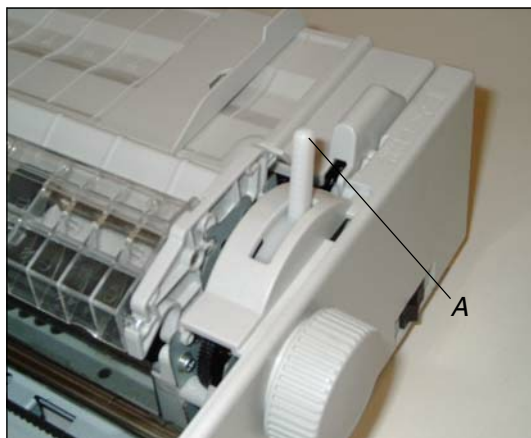


To load or feed paper, the printer must be:

- *In Online mode but not receiving or printing data*
- *In Offline mode.*

Paper select lever

The paper select lever is used to select the paper path.



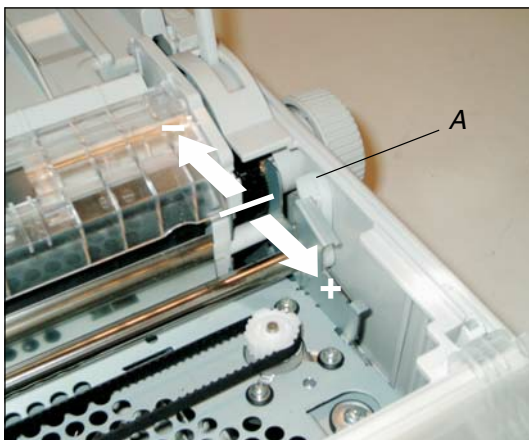
Move the paper select lever **A** backward for single sheets.

Move the paper select lever forward for continuous sheets.

Print Gap Lever

The printer can handle paper with different thicknesses, including multipart forms with up to five parts (original plus four copies). For details on paper thickness specifications, please refer to the section “*Paper Specifications*” on page 2-15 and to Appendix A, “*Paper specifications*” on page A-4. The print gap lever, located on the right under the cover, allows you to adjust for different paper thicknesses. Be sure to adjust the Print Gap lever whenever you change the number of copies being printed.

The print gap lever has twelve settings.

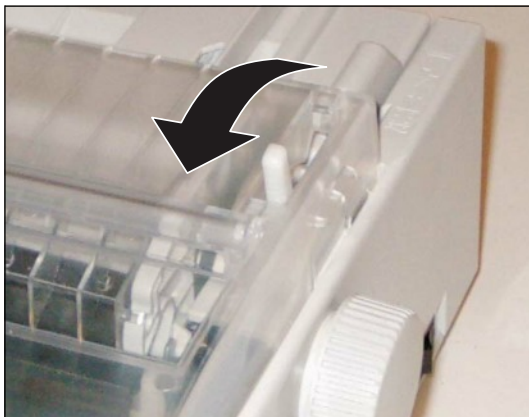


Moving the Print Gap lever **A** to the rear reduces the print gap, moving to the front widens the print gap.

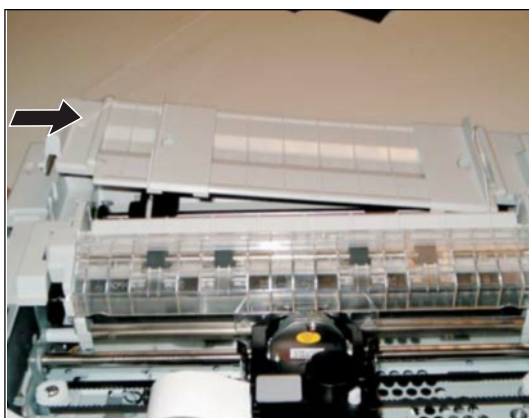


If printing smears, the ribbon misfeeds, or the paper jams, move the lever one position wider.

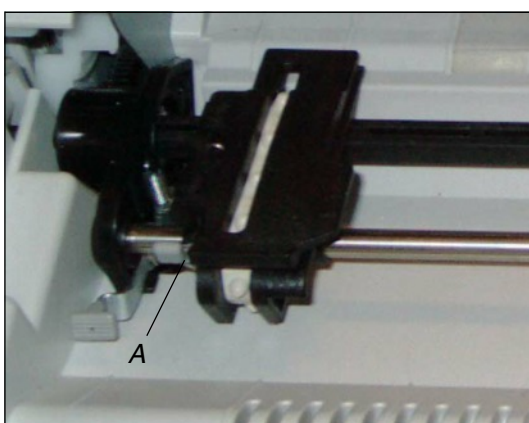
Fanfold paper



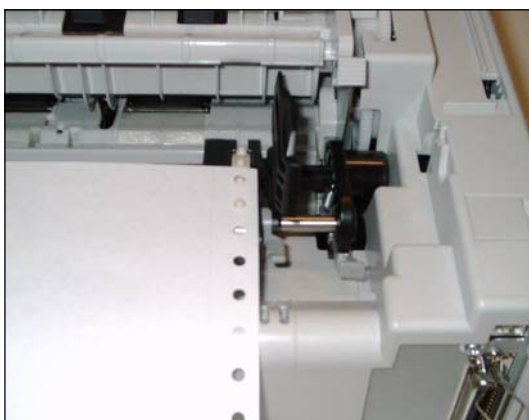
1. Move the paper select lever forward to continuous paper position.
2. If necessary, readjust the Print Gap lever for continuous forms (see section *"Print Gap Lever"* on page 2-17).



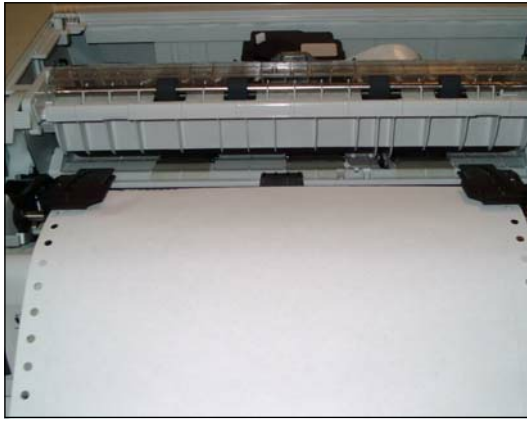
3. Slightly press the single sheet feeder to the right or to the left, until the holding pin comes free from its recess. Remove the feeder.



4. Release the tractor locking levers **A** by pulling them up. Once the right forms tractor is positioned, lock it by pulling up its locking lever.



5. Raise the tractor doors and fit the first two paper feed holes onto the right tractor pins. Close the right tractor door.



6. Repeat the procedure for the left tractor and adjust the left forms tractor to accommodate the width of the form.
7. Move the left tractor to make the paper flat. Do not stretch the paper too taut. Push the left locking lever down to secure the tractor in place.
8. Reinstall the manual paper feeder.
9. Press the **LOAD/EJECT** key to advance the paper to the top-of-form position from which printing can start. The printer is automatically placed in the Online State.

Unloading Continuous Forms

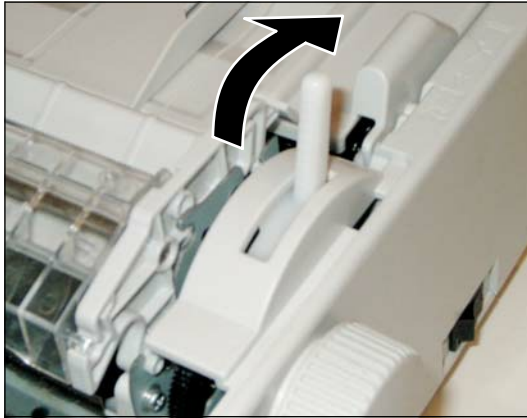
To unload continuous forms:

- 1 Make sure that the Paper Select lever is set to the continuous forms position.
- 2 Press the **LOAD/EJECT** key. The continuous forms paper is retracted to the park position. If the paper cannot be retracted in one operation, continue to press the **LOAD/EJECT** key until the paper is parked.



The printer can retract continuous forms-paper by a recommended maximum of 30.48 cm (12 inches) per operation (one form length).

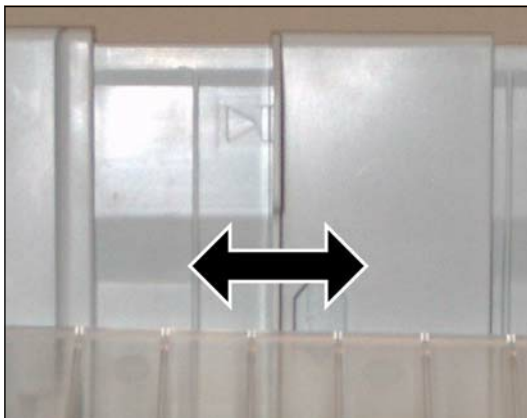
Single sheets



- 1 Move the paper select lever backward to Single Sheet position.
- 2 If necessary, readjust the Print Gap lever for continuous forms (see section "Print Gap Lever" on page 2-17).
- 3 Make sure that the printer is turned on.



4. Raise the single sheet feeder until it locks into its mounting.



5. Align the left paper guide with the mark on the left of the single sheet feeder. Adjust the right paper guide to the width of the paper used.



6. Insert a sheet of paper. Make sure that the bottom edge of the paper engages snugly with the platen. The paper will automatically advance to the top-of-form position if the Single Sheet Load option of the Setup mode is set to Automatic.

i The factory setting for the Single Sheet Load option is automatic loading after paper detection. If you set this option to manual, you will have to press LOAD / EJECT to feed the paper.

Ejecting Single Sheets

If you print using software which inserts a form feed at the end of each page, each sheet is ejected automatically upon the completion of the page printing.

To manually eject sheets of paper: Press the **LOAD/EJECT** key to execute a forward form feed.

Paper Parking Function

Switching from fanfold paper to single sheets

When using fanfold paper (push tractor), single sheets can be inserted without removing paper from the tractor feeder.

The fanfold paper can be moved to the parking position by the switches on the operation panel. Switching to friction feed after doing this allows printing on single sheets with the fanfold paper in the tractor feeder left as it is.

To switch from fanfold paper to single sheet mode proceed as follows:

- 1** Tear off printed paper at its perforation, if necessary.
- 2** Press the **LOAD/EJECT** key. The fanfold paper is transported backward to the park position.
- 3** Move the paper select lever backward to Single Sheet position.
- 4** If necessary, readjust the Print Gap lever for continuous forms (see section “*Print Gap Lever*” on page 2-17).
- 5** Raise the single sheet feeder until it locks in its mounting.
- 6** Align the left paper guide with the mark on the left of the single sheet feeder. Adjust the right paper guide to the width of the paper used.
- 7** Insert a sheet of paper. Make sure that the bottom edge of the paper engages snugly with the platen. The paper will automatically advance to the top-of-form position if the Single Sheet Load option of the Setup mode is set to Automatic.

Switching from single sheets to fanfold paper

To switch from single sheet mode to tractor mode, proceed as follows:

- 1** If a single sheet is loaded, press the **LOAD/EJECT** key. The sheet is ejected.
- 2** Move the paper select lever to the front (user's direction) to Continuous Paper position.
- 3** Press the **LOAD/EJECT** key again. The printer feeds the fanfold paper to the top of form position.

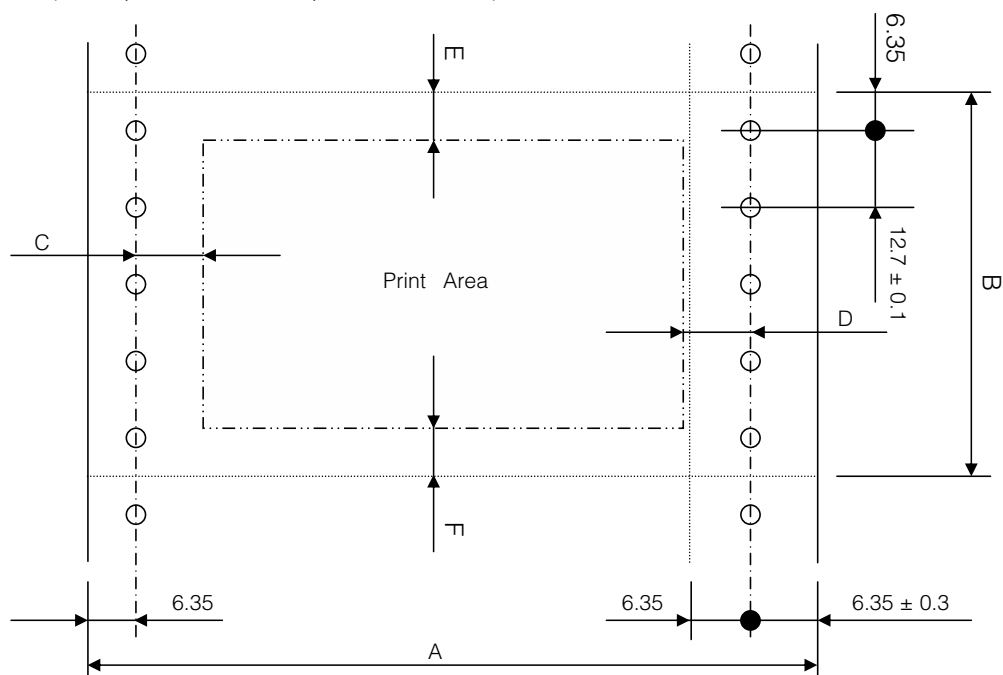
Feeding and Positioning Paper

Print Area Definition

- **Top-of-Form:** This value defines the distance between the edge of the paper and the place where you allow the printing to begin (position of line number 1). You can adjust this distance according to the condition of your paper (for example, pre-printed forms). When you load the paper, the printer feeds the paper to this position, waiting for printing commands.
- **Form Length:** Set the corresponding Page Set-Up option (FANFOLD FORM LENGTH / SINGLE FORM LENGTH) according to the actual physical page length (distance between two perforations for continuous forms). This will allow the printer to know exactly where the printhead is and to position it at the same position when a form feed occurs.
- **Top Margin:** This is the line where the printing actually starts. To define a top margin, select the position of this line within Adjust Page Margins mode (TOP MARGIN option). Example: In the following picture, TOP MRGN option is set to 3/72 inch.
- **Left Margin:** This is the margin where the left printing actually starts. To define a left margin, select the number of this margin within Adjust Page Margins mode (LEFT MARGIN option).
Example: In the following picture, BOTTOM MARGIN option is set to 147/42 inch.
- **Print area:** Print area defined by the corresponding Set-Up options: Form Length, Top-of-Form, Top Margin, and Bottom Margin.
- **Paper perforation:** The perforation defines the physical page length.

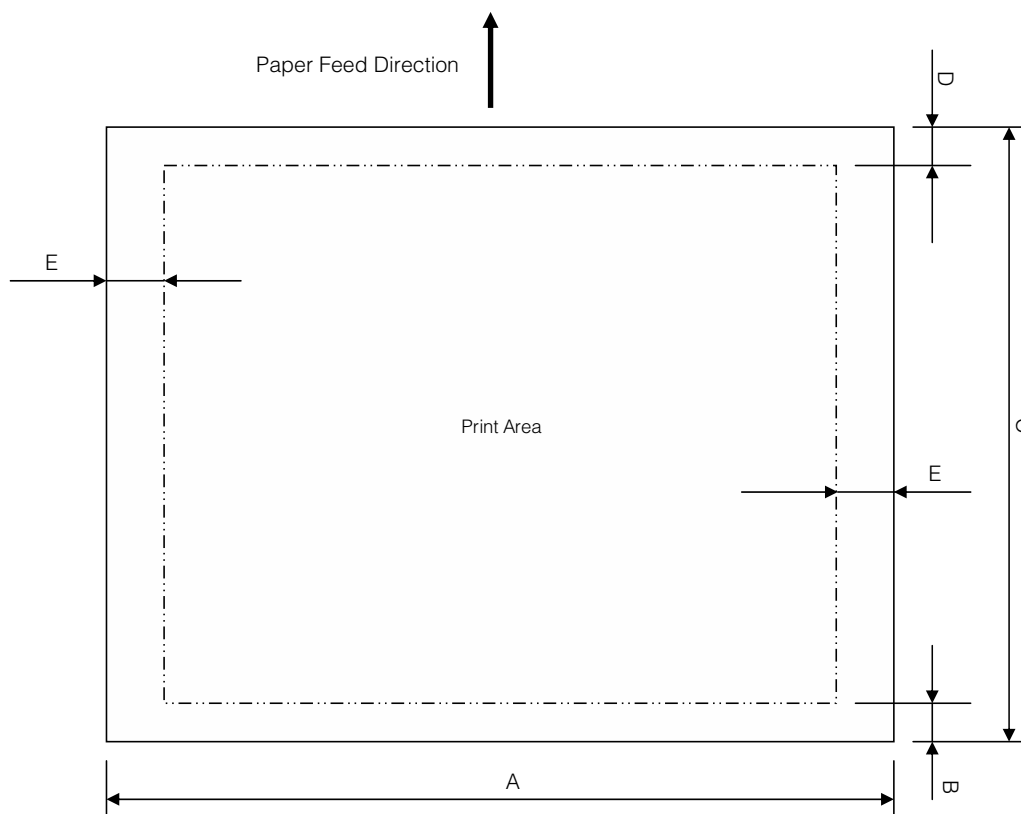
Continuous forms

(When printed with the top of the dot head)



Symbol	Dimensions	Remark
A	76.2 ~ 254	Paper width
B	~ 355.6 (Perforation) 150 ~ 355.6 (Fold)	Paper length
C	6.35 (min)	The recommended distance is to be 12mm Or more in actual operation to avoid Print blurs and stains affected by The sprocket hole or the vertical perforation.
D	6.35 (min)	
E	6.35	This distance is recommended in order to Avoid print blurs and print pitch disorder Affected by the horizontal perforation.
F	9.6	Same as E, however paper feed precision Of the last page is not guaranteed.

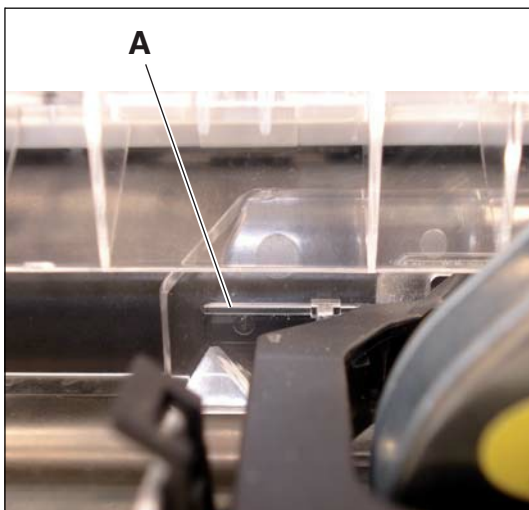
Single sheets



Symbol	Dimensions	Remark
A	76.2 ~ 297.2	Paper width
B	9.6 (min)	The distance from the rear end to the printable area
C	76.2 ~ 558.8	Paper length
D	6.35 (min)	The distance from the front end to the printable area
E	6.35 (min)	The distance from the sides of papers to the most right left dot position

Setting the first printing line (TOF)

You can use the TOF function for setting the vertical position of the first printing line.



The mark **A** on the transparent paper protective cover of the printhead can be helpful if you want to adjust the first printing line.

To adjust the first printing line vertically, proceed as follows:

- 1** Either transport fanfold paper to the next top of form position or feed an inserted single sheet by pressing the **LOAD/EJECT** key.
- 2** Make sure that the printer is in offline mode; press the **ONLINE** key, if necessary.
- 3** Hold the **ONLINE** key depressed for 3 seconds, and use the **Micro Feed Down** or **Micro Feed Up** keys to adjust the desired first printing line. Each micro feed will feed the paper down or up in 1/180 inch increments.
- 4** After releasing the key, the new adjusted first printing line is saved.

Selecting Tear-off mode

By default the “Tear” parameter of the printer is set to “Manual”. If you want to transport the paper to tear-off position, you must press the **TEAR OFF** key.

The “Tear” parameter can be set to automatic mode. In this case the paper is transported after a certain duration of time (1, 2, 3, 4 or 5 seconds) automatically to the tear-off position if the printer does not receive data.

When the printer receives the next print request, the paper moves automatically from the tear-off position to the previous position.

Proceed as follows to select an automatic tear-off mode:

- 1** Make sure that continuous paper is loaded and the printer is in offline mode. Press the **ONLINE** key if necessary.
- 2** Hold the **SHIFT** key depressed and press the **MENU** key.
After releasing the keys, the **MENU** indicator lights up, indicating that the printer has entered the setup mode.

	Button	Set-Up Action	
	-----	-----	
1	PARK	Move cursor Down to the next Function or Value	
	TEAR	Move cursor Up to the next Function or Value	
	FF/LOAD	Select the Option or Value and Move cursor Right	
	LF	Select the Option or Value and Move cursor Left	
	SEL	Select the Option or value and Move to SAVE&EXIT	
	-----	-----	
2	<FUNCTIONS>		
	PRINTER CONTROL		

- The initial printout contains a header, help menu (1), and <FUNCTIONS> menu (2). The header tells you that the printer is in the setup mode. The help menu provides a quick summary of how to use keys in the setup mode.
The <FUNCTIONS> menu **2** is started from **PRINTER CONTROL**.

- 3** Press the **PARK/PRINT/▼** key five times.

	<FUNCTIONS>		
	PRINTER CONTROL		
	FONT		
	SYMBOL SETS		
	SET UP		
	INTERFACE		
	COMMON (PUSHTRAC)		

- You have now reached the pushtractor parameter group: **COMMON (PUSH-TRAC)**.

- 4 Press the **FF/LOAD/Micro Feed Up/▶** key to select the parameter group.
- 5 Press the **PARK/PRINT/▼** six times.
- ▶ You have now reached the **TEAR** parameter.

<input type="radio"/>	<FUNCTIONS> PRINTER CONTROL FONT SYMBOL SETS SET UP INTERFACE COMMON (PUSHTRAC)	<input type="radio"/>
<input type="radio"/>		<input type="radio"/>
<input type="radio"/>	<PAPER SET> <LPI> <TOP MARGIN> <BOTTOM MARGIN> <FORM LENGTH> <CENTERING> <TEAR>	<input type="radio"/>
<input type="radio"/>		<input type="radio"/>

- 6 Press the **FF/LOAD/Micro Feed Up/▶** key to select the parameter.
- ▶ The current value is printed, **MANUAL** in our example.
- 7 Repeatedly press the **FF/LOAD/Micro Feed Up/▶** key to position the desired value, e.g. **AUTO 1 SEC**.

<input type="radio"/>	<PAPER SET> <LPI> <TOP MARGIN> <BOTTOM MARGIN> <FORM LENGTH> <CENTERING> <TEAR>	<input type="radio"/>
<input type="radio"/>		<input type="radio"/>
<input type="radio"/>		<input type="radio"/>
<input type="radio"/>	MANUAL AUTO 1 SEC	<input type="radio"/>

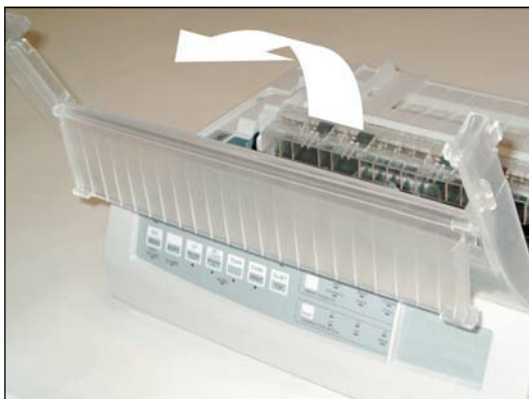
- 8 Press the **SEL/MENU** key to select the desired value and to activate the **SAVE&EXIT** position.
- 9 Press the **SEL/MENU** key again to save the new value and exit the setup mode.
- ▶ The printer exits the setup mode and returns to the ready mode. The selected values remain in effect until the next time they are changed.

Using the tractor as pull tractor

By default the tractor of your printer is mounted at the rear and works as push tractor.

You can use the tractor as pull tractor also. Because the paperway is more straight in pull mode this may be useful if you want to print critical paper types.

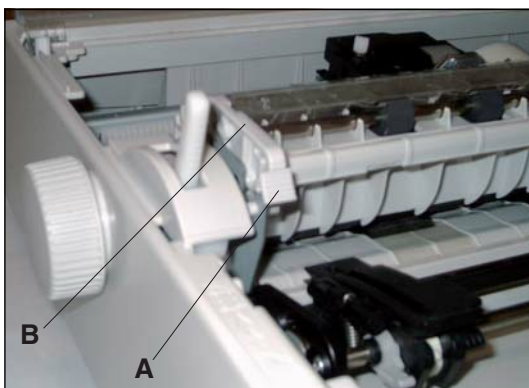
This section describes how to remove the push tractor and install it as pull tractor.



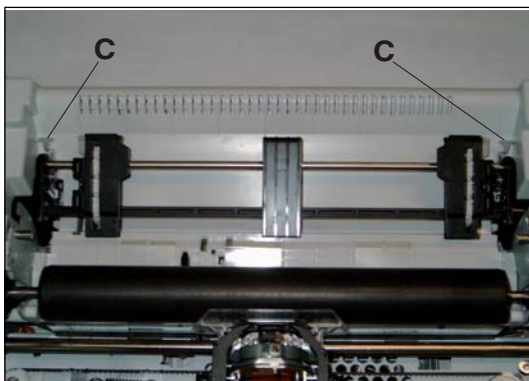
1 Open the printer cover.



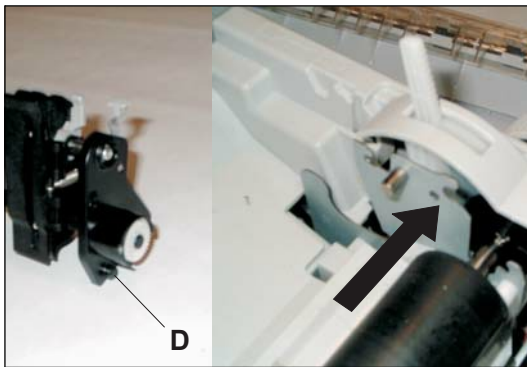
2 Slightly press the single sheet feeder to the right or to the left, until the holding pin comes free from its recess. Remove the feeder.



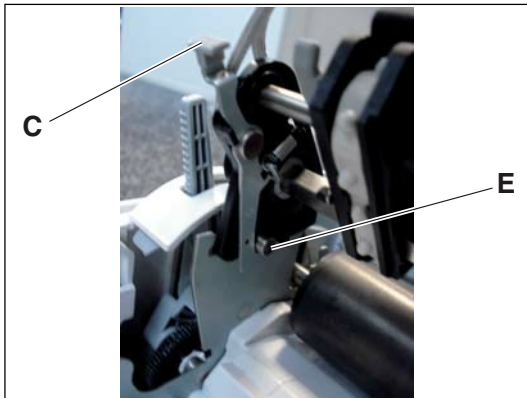
3 Press the two hooks **A** and remove cover **B**.



4 Press the two levers **C** upward and remove the tractor.



- 5** Insert the two holding pins **D** of the tractor into the recesses of the mountings.



- 6** Press the two levers **C** into your direction, move the tractor backward until the two pins **E** engage into the recesses of the tractor and release the levers.



- 7** Close the cover of the printer.

If you switch the printer on again, it automatically detects that the pull tractor is installed. You can now feed continuous paper from the slot in the bottom of the printer.



After loading paper into the tractor, you must carry out a form feed. For this reason you cannot print on the first form.

Printing

This chapter describes the following typical printing operations:

- Starting, stopping, or resuming printing and viewing last printed lines.
- Removing printed pages.

The **PARK/PRINT**, **FF/LOAD** and the **SEL/MENU** keys are used for these operations, which are described in this section. For a summary of the operation of these keys, see the section “*Operations of the Control Panel*” on page 2-12 in Chapter 2, “*Operating the printer*” on page 2-1.

Instructions for loading and handling paper are also given in Chapter 2, “*Operating the printer*”.

Starting or Stopping Printing

Starting Printing

Before you start to print, make sure that paper is loaded. Also, verify that the paper select lever and the print gap lever are set to the appropriate position.

To start printing, make sure that the Ready indicator is lit (the printer is ready). If not so, press the **SEL/MENU** key to place the printer in the Ready state. Start your print job.

Stopping Printing

To stop printing, press the **SEL/MENU** key to place the printer in the Pause state. The printer stops after printing the current line. You can also use your software to stop printing, but there will be a slight delay before printing stops. After the printer enters the Pause state, it still receives data until the print buffer becomes full of new data.



The data in the print buffer will be lost if you turn the printer off.

Resuming Printing

To resume printing, press the **SEL/MENU** key again. To cancel printing, use the cancel commands provided by your software or computer. To clear the print buffer, turn the printer off.



Any data sent to the print buffer before you canceled printing will be lost.

Resuming from a Paper-Out

The printer can “sense” when paper runs out. The printer stops printing and lights the **ALARM** indicator. To resume printing when paper runs out, follow the procedures described below:

- 1 Install paper on the forms tractor unit or on the cut sheet feeder as described in Chapter 2, “*Operating the printer*”.
- 2 To load the first sheet of paper, press the **FF/LOAD** key for continuous forms. Single sheets are automatically loaded unless you change the factory default setting. The **ALARM** indicator will turn off and the printer resumes printing.

Special mode

Your Printer has two operation modes:

- The Normal mode is used for daily operations like paper handling and printing as explained in Chapter 2, “*Operating the printer*” and Chapter 3, “*Printing*”.
- The Special mode is used to change the printer settings and to test the printer functions.

The following table summarizes the purpose of each function.

Special Mode Functions

Function	Purpose
Set-Up Mode	Change the Printer settings.
Print Configuration	Print the Printer Configuration. To check your settings by printing a list of all the printer’s currently selected values.
Printing Test	Run the printing test.
Hex Dump Mode	Hex-dump allows you to determine whether the computer is sending the correct commands to the printer. This is useful for troubleshooting.
Printing Alignment Adjustment	Perform adjustment Bi-directional alignment.
Top of Form Adjustment	Perform adjustment of Top of Form.
Setting of The First Dot Position on the left side	Change the left margin fine adjustment.
Menu Access	Restricts access to Set-Up functions from the control panel.
Setting Set-Up Mode to Default Value (Standard)	Resets factory settings to standard.

Set-Up mode

The Set-Up mode allows you:

- To define a printer operating environment for your application software. The printer operating environment includes the emulation, font, symbol sets, horizontal and vertical pitches, page length and margins, line mode, and printing direction. It also includes emulation dependent options like the character set.
- To define general installation parameters related to the integration in your environment (e.g., menu language, tear-off control, auto-load control, and interface).
- To recall all the factory settings (including the user environment and installation parameters).
- To define what kind of settings modifications are allowed to avoid accidentally changing of Set-Up values.

How Set-Up Works

The Set-Up mode consists of Set-Up function menus which correspond to several printer settings. Each parameter group generally has many parameters which correspond to the print features to be changed. Each parameter includes many values to be selected. All the Set-Up function menus, parameters and values are printed in a logical sequence on the paper when you enter the Set-Up mode, including the usage of keys. You can perform all the Set-Up operations by using keys on the control panel in the following order:

- Navigating through the option menu structure.
- Selecting a new value for an option.
- Saving your new printer configuration.

Entering the Set-Up Mode

Proceed as follows to enter the Set-Up mode:

- 1** Make sure that continuous paper is loaded and the printer is in offline mode. Press the **SEL/MENU** key if necessary.
- 2** Hold the **SHIFT** key depressed and press the **MENU** key.
After releasing the keys, the **MENU** indicator lights up, indicating that the printer has entered the Set-Up mode.

		Button Set-Up Action	

	1	PARK Move cursor Down to the next Function or Value	
		TEAR Move cursor Up to the next Function or Value	
		FF/LOAD Select the Option or Value and Move cursor Right	
		LF Select the Option or Value and Move cursor Left	
		SEL Select the Option or value and Move to SAVE&EXIT	

	2	<FUNCTIONS>	
		PRINTER CONTROL	

- The initial printout contains a header, help menu (**1**), and **<FUNCTIONS>** menu (**2**). The header tells you that the printer is in the Set-Up mode. The help menu provides a quick summary of how to use keys in the Set-Up mode.

The **<FUNCTIONS>** menu **2** is started from **PRINTER CONTROL**.

Overview of the Set-Up Mode

Your Printer has eleven function menus in Set-Up mode.

When you press the **PARK/PRINT/▼** key or the **TEAR/▲** key, the following next or previous <FUNCTIONS> menu is printed.

- ▶ PRINTER CONTROL
- ▶ FONT
- ▶ SYMBOL SETS
- ▶ SET-UP
- ▶ INTERFACE
- ▶ NETWORK
- ▶ COMMON (PUSH TRAC)
- ▶ PULL TRACTOR
- ▶ FRICTION
- ▶ RCALL-FACT
- ▶ SAVE&EXIT

The following table summarizes the purpose of each function.

Function	Description
PRINTER CONTROL	Changes the emulation (generally or by interface).
FONT	Selects the Font, the Draft mode (Normal or High Speed Draft) and the character pitch.
SYMBOL SETS	Selects the IBM Set, code page (IBM), the character set (Epson) and the style of the zero character (slashed/ unslashed).
SET-UP	Selects the print direction: unidirectional, bidirectional or softcontrol printing. Specifies the effect of CR (Carriage Return) and LF (Line Feed) codes. Selects timeout, language, safe panel and the printhead impact.
INTERFACE	Changes settings for all interfaces.
NETWORK	Changes network settings of the integrated print server (option).
COMMON (PUSH TRAC)	Changes push tractor settings (e.g. line density, margins, tear-off function).
PULL TRACTOR	Changes pull tractor settings (e.g. line density, margins, tear-off function).
FRICTION	Changes settings for the single sheet mode (e.g. line density, margins, load function).
RCALL-FACT	Resets all values of the Set-Up menu to the factory settings.
SAVE&EXIT	Saves the settings and exits Set-Up mode.

To select a function from the <FUNCTIONS> menu:

- 1** Repeatedly press the **PARK/PRINT/▼** key or the **TEAR/▲** key to position the function you require.
- 2** Press the **FF/LOAD/Micro Feed Up/►** key to select the function. The printer prints the first parameter. Repeatedly press the **PARK/PRINT/▼** key or the **TEAR/▲** key to position the option you require.

The first five PRINTER CONTROL parameters are shown below.

<input type="radio"/>	<FUNCTIONS> PRINTER CONTROL		<input type="radio"/>
<input type="radio"/>		EMULATION	<input type="radio"/>
<input type="radio"/>		EMUL PARALLEL	<input type="radio"/>
<input type="radio"/>		EMUL USB	<input type="radio"/>
<input type="radio"/>		EMUL SERIAL	<input type="radio"/>
<input type="radio"/>		EMUL ETHERNET	<input type="radio"/>

- 3** Press the **FF/LOAD/Micro Feed Up/►** key to select the option. The printer prints the first value. Repeatedly press the **PARK/PRINT/▼** key or the **TEAR/▲** key to position the value you require.

The EMULATION values are shown below.

<input type="radio"/>	<FUNCTIONS> PRINTER CONTROL		<input type="radio"/>
<input type="radio"/>		EMULATION	<input type="radio"/>
<input type="radio"/>		EPSON-EP	<input type="radio"/>
<input type="radio"/>		IBM XL	<input type="radio"/>
<input type="radio"/>		PORT DEPEND	<input type="radio"/>



If you leave the menu the last set item (e.g. PORT DEPEND) remains active and set.

Options with Pre-determined Values

For some options, you can choose among a limited set of pre-determined values. To select such a value:

- 1** Repeatedly press the **PARK/PRINT/▼** key or the **TEAR/▲** key to position the value you require.
- 2** Press the **FF/LOAD/Micro Feed Up/►** key to select the function. The printer prints the first parameter.
- 3** Press the **SEL/MENU** key to select the desired value and to activate the **SAVE&EXIT** position.
- 4** Press the **SEL/MENU** key again to save the new value and exit the Set-Up mode.
 - ▶ The printer exits the Set-Up mode and returns to the ready mode. The selected values remain in effect until the next time they are changed.

Example: Changing the Vertical Pitch

To become familiar with the Set-Up mode, try the following example. This example shows how to change the vertical pitch in COMMON (PUSH TRAC) from 6 lines per inch to 8 lines per inch.

- 1 Enter the Set-Up mode:** Turn the printer off and back on while pressing the **SEL/MENU** key.
- 2 Select the COMMON (PUSH TRAC) function:** Wait for the printer to stop printing and press the **PARK/PRINT/▼** key five times to print the COMMON (PUSH TRAC) function.
- 3** Press the **FF/LOAD/Micro Feed Up/►** key to print the PAPER SET parameter.
- 4** Press the **PARK/PRINT/▼** key to print the LPI parameter.
- 5** Press the **FF/LOAD/Micro Feed Up/►** key to print the current LPI value (default: 6 LPI).
- 6 Change the vertical pitch from 6 to 8 lines per inch.** Press the **PARK/PRINT/▼** key once to position the 8 LPI. Press the **SEL/MENU** key to select 8 LPI.
- 7** Press the **SEL/MENU** key to select 8 LPI and to activate the **SAVE&EXIT** position.
- 8** Press the **SEL/MENU** key again to save the new value and exit the Set-Up mode and return to the Ready state. This setting remain in effect until the next time they are changed.

Options with Undetermined Values

For top and bottom margin parameters, you can choose among a continuous range of values.

Example: Changing the Top Margin of the Single Sheet Feeder

This example shows how to change the top margin of the single sheet feeder from 0/72 inch to 3/72 inch.

- 1 Enter the Set-Up mode:** Turn the printer off and back on while pressing the **SEL/MENU** key.
- 2 Select the FRICTION function:** Wait for the printer to stop printing and press the **PARK/PRINT/▼** key seven times to select the FRICTION function.
- 3** Press the **FF/LOAD/Micro Feed Up/►** key to print the LPI parameter.
- 4** Press the **PARK/PRINT/▼** key to print the TOP MARGIN parameter.
- 5** Press the **FF/LOAD/Micro Feed Up/►** key to print the current top margin value.
- 6** Repeatedly press the **PARK/PRINT/▼** or the **TEAR/▲** key until the desired value is printed.
- 7** Press the **SEL/MENU** key to select the desired value and to activate the **SAVE&EXIT** position.
- 8** Press the **SEL/MENU** key again to save the new value and exit the Set-Up mode and return to the Ready state. These setting remain in effect until the next time they are changed.

Points to Remember

- ▶ We recommend that you use continuous forms paper for printing in the Set-Up mode because the output will exceed a single page.
- ▶ Whenever you enter the Set-Up mode, short help menus are printed at the top of the page. Use the help menus for quick reference while in the Set-Up mode.
- ▶ When printing the option for each function, you can move either forward or backward in the option list. To move forward (print the next option), press the **PARK/PRINT/▼** key. To move backward (print the previous option), press the **TEAR/▲** key.
- ▶ While in the <FUNCTIONS> menu or when selecting a function that contains options and selectable values, press the **SEL/MENU** key to reprint the <FUNCTIONS> menu **SAVE&EXIT**.

Functions, parameters and values

The following section introduces and explains all the possible menu settings. Please note that some settings are overridden by commands from the computer.



Values in bold are the factory settings.

PRINTER CONTROL menu

Parameter	Value	Description
EMULATION	EPSON-EP2 IBM XL24E PORT DEPEND	Selects the same emulation as that selected by your software. PORT DEPEND: The printer selects emulation according to the active interface (such as serial, USB). See the next options.
EMUL PARALLEL	EPSON-EP2 IBM XL24E	Selects an emulation for the Parallel interface. This is invalid and skipped when PORT DEPEND is not selected for the EMULATION option.
EMUL USB	EPSON-EP2 IBM XL24E	Selects an emulation for the USB interface. This is invalid and skipped when PORT DEPEND is not selected for the EMULATION option.
EMUL SERIAL	EPSON-EP2 IBM XL24E	Selects an emulation for the optional Serial interface. This is invalid and skipped when PORT DEPEND is not selected for the EMULATION option.
EMUL ETHERNET	EPSON-EP2 IBM XL24E	Selects an emulation for the optional Ethernet interface. This is invalid and skipped when PORT DEPEND is not selected for the EMULATION option.
IBM AGM	NO YES	Selects the IBM graphic mode (AGM = Advanced Graphics Mode).

FONT menu

Parameter	Value	Description
FONT	DRAFT, ROMAN, SANS SERIF , COURIER, OCR-B, OCR-A, PRES- TIGE, SCRIPT, ORATOR, GOTHIC, SOUVENIR	Selects a font to be active when the power is turned on. For fixed-spaced fonts, be sure to change the horizontal pitch as well. Draft font: lower resolution than letter quality, 3 times the speed of the other fonts which are printed in letter quality
DRAFT FONT	NORMAL DRAFT	Selects if the Draft font is printed as Normal Draft.
CPI	10CPI /12CPI/15CPI/ 17CPI/20CPI	Selects the characters per horizontal inch.

SYMBOL SETS menu

Parameter	Value	Description
IBM SET 1/2	IBM SET1 IBM SET2	Selects if IBM character set 1 (normal) or 2 (extended) is active.
CODE PAGE	CRO-ASCII, Arabic Farsi, Arabic Urdo, Greek DEC, Greek ELOT 928, CP 437, CP 737, CP 850, CP 851, CP 852, CP 857, CP 858, CP 860, CP 861, CP 863, CP 864, CP 864 Extended, CP 865, CP 866 Cyrillic, CP 866 Bulgaria, CP 1250, CP 1251, CP 1252, CP 1253, CP 1254, 8859-1, 8859-1(SAP), 8859-2, 8859-5, 8859-7, 8859-9, 8859-15, BRASCII, Abicomp, Roman8, Coax/Twinax, New-437, New-DIG 850, Old-Code 860, Flarro 863, Table 865	Selects the national code page (for the IBM emulation only).
E-CHR SET	USA /FRANCE/GERMANY/UK/DENMARK/SWEDEN/ITALY/SPAIN/JAPAN/NORWAY/ DENMARK II/ SPAIN II/ LATIN AM/KOREA/LEGAL	Selects a national character set (Epson emulation only).
ZERO CHARACTER	SLASHED UNSLASHED	Selects if normal zero (0) or the slashed zero (Ø) is printed.

SET-UP menu

Parameter	Value	Description
PRINT DIR	UNIDIR/UNIDIR(G)/ BIDIR/ SOFT CONTROL	Unidirectional printing is used for printing that needs precise vertical alignment. Unidirectional printing is slower than bi-directional printing. Bi-directional printing: The printer prints in either direction while seeking the next print direction for a shorter print time. The unidirectional command is ignored. SOFT CONTROL: The print direction follows a command from the computer. If no command is sent, print direction is bi-directional.
CR CODE	CR=CR CR=LF+CR	Specify the effect of CR (Carriage Return) code. CR=CR: No line feed is added to a carriage return CR=LF+CR: A line feed is added to each carriage return.
LF CODE	LF=LF LF=LF+CR	Specify the effect of LF (Line Feed) code. LF=LF: No carriage return is added to a line feed. LF=LF+CR: A carriage return is added to each line feed.
TIME OUT PRINT	NO YES	Prints out the data in the buffer after a short time, even without a print command.
LANGUAGE	ENGLISH /GERMAN/ SPAIN/FRENCH/ ITALIAN	Specifies a language to be used to print the Set-Up menu functions and options (status page).
SAFE PANEL	NO LIMITED	If the parameter LIMITED is selected, the access to Set-Up menu is restricted. NOTE: For more information refer to the section “Menu access” on page 4-28.
IMPACT	1/2/3/4/5/ 6 /7/8	Selects the impact strength of the print-head (1 = light). This ensures that single or copy paper produces optimum results. 6: for single-ply paper. 7: for 2- or 3-ply paper 8: for 4-ply paper and above

INTERFACE menu

Parameter	Value	Description
BUFFER	2KBYTE/16KBYTE/ 64KBYTE/ 128KBYTE / 256KBYTE	Selects the size of the interface buffer.
I/F TYPE	PARALLEL/USB/ SERIAL/ETHERNET/ AUTO	Selects the type of interface to the computer. AUTO: All interfaces are ready for communication. The printer communicates with the interface from which it first receives data. The interface is active until the input buffer becomes empty.
PAPER EMPTY	OFFLINE ONLINE	Sets printer to offline or online mode after paper empty.
PARALLEL	NIBBLE /UNI DIR/ M307/TGNet III	Selects the transmission mode of the parallel interface.
I-PRIME	BUFFER PRINT / BUFFER CLEAR/ INVALID	Behavior of the printer after receiving an Init/Prime signal.
BAUD RATE	4800 BPS/9600 BPS/ 19200 BPS /38400 BPS	The baud rate is in bits per second. Select the same baud rate as that used by your computer or modem.
PARITY	NONE /EVEN/ODD	Parity setting; select the same word parity setting that is used by your computer or modem. None causes transmission in both directions without parity bit. Even: The bytes are checked to ensure they have even parity. Odd: The bytes are checked to ensure they have odd parity.
DATA BIT	8 BIT /7 BIT	Word Length setting; select the same word length setting that is used by your computer or modem. 8 bit: 8 Data bits per data byte. 7 bit: 7 Data bits per data byte.
STOP BIT	1/2	Word Length setting; select the same word length setting that is used by your computer or modem. Selects 1 or 2 stop bit per data byte.
PROTOCOL	READY /BUSY XON/XOFF	Selects the type of protocol, i.e. a certain set of rules and procedures for ensuring error-free data exchanges between computer and printer.

Parameter	Value	Description
BUSY LINE	DTR /RTS/SSD+/SSD-	Selects the signal indicating that the serial interface is in busy state (buffer is full, printer is out of paper or an error is detected). Valid only if the READY/BUSY protocol has been selected.
DSR SIGNAL	VALID /INVALID	Sets the signal DSR (D ata S et R eady) valid or invalid.
DTR SIGNAL	POWER UP /READY ON	DTR is either set constantly to on (power up) or is used for handshaking (ready on).
BUSY TIME	200 ms /1 sec	Selects the busy time of the serial interface.

NETWORK menu

The following settings are valid for the optional internal Ethernet adapter only.

Parameter	Value	Description
IP ADDRESS	0,0,0,0 ... 255,255,255,255	Selects the IP address.
GATEWAY	0,0,0,0 ... 255,255,255,255	Selects the Gateway address.
NET MASK	0,0,0,0 ... 255,255,255,255	Selects the address of the Subnet mask.

COMMON (PUSH TRAC) menu

Parameter	Value	Description
PAPER SET	COMMON FEED DEPEND	Apply paper properties to all paperways or feed dependend.
LPI	1LPI/2LPI/3LPI/4LPI/5LPI / 6LPI /8LPI/12LPI	Sets the line density in lines per inch. 6LPI = 6 lines per inch.
TOP MARGIN	0/60INCH /1/60INCH /...../119/60INCH/ 120/60INCH	Specifies the position of the top line in n/60 inch. See <i>"Print Area Definition"</i> on page 2-25.
BOTTOM MARGIN	0/60INCH /1/60INCH /...../29/60INCH/30/ 60INCH	Specifies the position of the bottom line in n/60 inch. See <i>"Print Area Definition"</i> on page 2-25.
RIGHT MARGIN	8 INCHES/ 13.6 INCHES	Specifies the print width of the wide model.
FORM LENGTH	3 INCHES/3.5 INCHES/ 4 INCHES/5.5 INCHES/ 6 INCHES/7 INCHES/ 8 INCHES/8.5 INCHES/ 11 INCHES / 11 2/3 INCHES/ 12 INCHES/14 INCHES/ 17 INCHES	Specifies the length of the page in inches. See <i>"Print Area Definition"</i> on page 2-25.
CENTERING	MODE1 MODE2	Adjusts the position of the print-head to the used paper width. This reduces and optimizes the printhead movement. Narrow printer: Select MODE1 for paper widths between 125 and 209 mm and widths narrower as 125 mm. Wide printer: Select MODE1 for paper widths narrower as 125 mm. Select MODE2 for paper widths between 125 and 210 mm.

Parameter	Value	Description
TEAR	AUTO 1 SEC/AUTO 2 SEC/ AUTO 3 SEC/AUTO 4 SEC/ AUTO 5 SEC/ MANUAL	Specifies the (auto) start time of tear-off feeding. If e.g. AUTO 3 SEC is selected, auto tear-off feeding is executed 3 seconds after data transmission from the computer has ended. If MANUAL is selected, you have to feed the paper in the tear-off position manually.
PAPER INITIAL	NO YES	

FRICTION menu

Parameter	Value	Description
LPI	1LPI/2LPI/3LPI/4LPI/5LPI/ 6LPI /8LPI/12LPI	Sets the line density in lines per inch. 6LPI = 6 lines per inch.
TOP MARGIN	0/60INCH /1/60INCH /...../119/60INCH/ 120/60INCH	Specifies the position of the top line in n/60 inch. See <i>"Print Area Definition"</i> on page 2-25.
BOTTOM MARGIN	0/60INCH /1/60INCH /...../29/60INCH/30/ 60INCH	Specifies the position of the bottom line in n/60 inch. See <i>"Print Area Definition"</i> on page 2-25.
RIGHT MARGIN	8 INCHES/ 13.6 INCHES	Specifies the print width of the wide model.
FORM LENGTH	3 INCHES/3.5 INCHES/ 4 INCHES/5.5 INCHES/ 6 INCHES/7 INCHES/ 8 INCHES/8.5 INCHES/ 11 INCHES / 11 2/3 INCHES/ 12 INCHES/14 INCHES/ 17 INCHES	Specifies the length of the page in inches. See <i>"Print Area Definition"</i> on page 2-25.
CENTERING	MODE1 MODE2	Adjusts the position of the print-head to the used paper width. This reduces and optimizes the printhead movement. Narrow printer: Select MODE1 for paper widths between 125 and 209 mm and widths narrower as 125 mm. Wide printer: Select MODE1 for paper widths narrower as 125 mm. Select MODE2 for paper widths between 125 and 210 mm.
MEDIA	FRICTION CONTINUOUS	Selects the media type: single sheets (FRICTION) or continuous forms (CONTINUOUS).

Parameter	Value	Description
S-SHEET LD	AUTO 1 SEC /AUTO 2 SEC/AUTO 3 SEC/AUTO 4 SEC/AUTO 5 SEC/ MANUAL	Specifies the (auto) start time of paper loading. If e.g. AUTO 3 SEC is selected, auto paper loading is executed 3 seconds after inserting the paper. If MANUAL is selected, you have to load the paper manually.

Recalling Factory Settings (RCALL-FACT)

Factory settings are those settings pre-selected at the factory. To recall (reset) the factory settings, select the RCALL-FACT function and press the **FF/LOAD/Micro Feed Up/▶** key. After that select the SAVE&EXIT function and press the **SEL/MENU/EXIT** key.

Options under the Set-Up and Adjustment functions are all initialized to the factory settings.

Saving and Exiting

To exit the set-up mode and save your setting, first select the SAVE&EXIT function and then press the **SEL/MENU/EXIT** key.

Any settings changed while in the Set-Up mode are saved as the new power-on defaults for the printer. The new defaults remain active until you change them again.

Using the Diagnostic Functions

Print Configuration Function

This function prints a list of all the printer's currently selected values. This function is useful for checking the printer settings when you first enter the Set-Up mode or just before you exit.

- 1** To enter the Printer Configuration mode:
 - a) Make sure that the tractors are loaded with continuous feed paper and that the paper select lever is set forward.
 - b) Turn the printer off.
 - c) Turn the printer back on while pressing the **PARK/PRINT** key.
- 2** The printer starts to print a list of the currently selected values. The pre-selected factory settings are shown on the opposite page.
- 3** To exit the Printer Configuration mode: After the printer has finished printing the list of values, the printer will automatically restart in the power-up state.



Press the SEL/MENU/EXIT key to stop printing. Pressing the key again will resume printing. Press the FF/LOAD key in the pause state to execute a form feed.

0010090203

Printer Configuration

F/W Version : VDVT06

IPL Version : V1.00

CS Version : V0.24

1	2	3	4	5	6	7	8	9
PRINTER CONTROL				NETWORK				
Options		Value		Options		Value		
EMULATION		EPSON-EP		IP ADDRESS		0. 0. 0. 0		
EMUL PARALLEL		EPSON-EP		GATEWAY		0. 0. 0. 0		
EMUL USB		EPSON-EP		NETMASK		0. 0. 0. 0		
EMUL SERIAL		EPSON-EP		COMMON (PUSHTRAC)				
EMUL ETHERNET		EPSON-EP		Options		Value		
FONT		DRAFT		PAPER SET		COMMON		
DRAFT FONT		NORMAL DRAFT		LPI		6LPI		
CPI		10CPI		TOP MARGIN		0/72 INCH		
SYMBOL SETS				BOTTOM MARGIN		0/72 INCH		
Options		Value		RIGHT MARGIN		8 INCHES		
IBM SET 1/2		IBM SET1		FORM LENGTH		11 INCHES		
CODE PAGE		CP 437		CENTERING		MODE1		
E-CHR SET		USA		TEAR		MANUAL		
ZERO CHARACTER		SLASHED		PAPER INITIAL		NO		
SET UP				PULL TRACTOR				
Options		Value		Options		Value		
PRINT DIR		SOFT CONTROL		LPI		6LPI		
CR CODE		CR=CR		TOP MARGIN		0/72 INCH		
LF CODE		LF=LF+CR		BOTTOM MARGIN		0/72 INCH		
TIME OUT PRINT		YES		RIGHT MARGIN		8 INCHES		
LANGUAGE		ENGLISH		FORM LENGTH		11 INCHES		
SAFE PANEL		NO		CENTERING		MODE1		
IMPACT (1=light)		6		TEAR		MANUAL		
INTERFACE				FRICTION				
Options		Value		Options		Value		
BUFFER		128KBYTE		LPI		6LPI		
I/F TYPE		AUTO		TOP MARGIN		0/72 INCH		
PAPER EMPTY		OFFLINE		BOTTOM MARGIN		0/72 INCH		
PARALLEL		NIBBLE		RIGHT MARGIN		8 INCHES		
I-PRIME		BUFFER PRINT		FORM LENGTH		11 INCHES		
BAUD RATE		19200 BPS		CENTERING		MODE1		
PARITY		NONE		MEDIA		FRICTION		
DATA BIT		8 BIT		S-SHEET LD		AUTO 1 SEC		
STOP BIT		1		MENU-ACCESS				
PROTOCOL		READY/BUSY		Options		Value		
BUSY LINE		DTR		MENU-ACCESS		ALL FUNCTION		
DSR SIGNAL		VALID						
DTR SIGNAL		POWER UP						
BUSY TIME		200 msec						

Printing Test Function

The printing test function prints test pages independently of your computer to check printing operations and quality. It does not check the interface between the computer and the printer.

The printing test prints all of the characters available in the ASCII character set.

1 To enter the Printing Test mode:

- Make sure that the tractors are loaded with continuous feed paper and that the paper select lever is set forward.
- Turn the printer off.
- Turn the printer back on while pressing the **PRINT QUALITY** key.

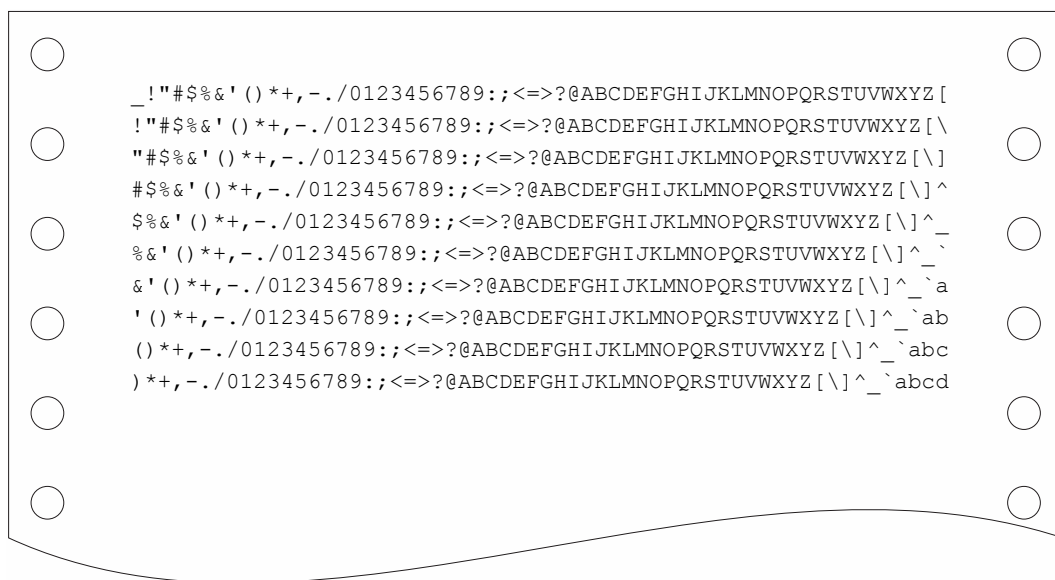


*Do not press any keys alone or in combination, except for pressing the **PRINT QUALITY** key alone when turning the printer on, to avoid initiating unexpected tests not permitted for the user.*

2 The printer starts to print rolling ASCII data as shown below.

3 To exit the Printer Configuration mode:

Printing Test mode is continues until power OFF.



*Press the **SEL/MENU/EXIT** key to stop printing. Pressing the key again will resume printing. Press the **FF/LOAD** key in the pause state to execute a form feed.*

Hex Dump Mode

The Hex Dump mode prints data and commands in hexadecimal characters and abbreviated control codes. The ASCII characters are used for printing. No characters are printed for hexadecimal codes 80 to FF. The Hex Dump mode is useful for checking whether your computer is sending the correct commands to the printer and whether the printer is executing the commands correctly. It is also useful for debugging software programs.

1 To enter the Printing Test mode:

- Make sure that the tractors are loaded with continuous feed paper and that the paper select lever is set forward.
- Turn the printer off.
- Turn the printer back on while simultaneously pressing the **SHIFT** key.



Do not press any keys alone or in combination, except for pressing the SHIFT key alone when turning the printer on, to avoid initiating unexpected tests not permitted for the user.

2 Print the Hex Dump:

- To start Hex Dump printing, send your file or program to the printer. The printer goes online and prints the Hex Dump.
- Press the SEL/MENU key to pause and resume printing in Hex Dump mode. To resume Hex Dump printing, press the SEL/MENU key again.
- To print another Hex Dump, send another file to the printer.

3 Exit the Hex Dump mode:

Turn the printer off to exit the Hex Dump mode.

○	Address	Hex data	ASCII	○
	0000	00 01 02 03 04 05 0C 0D 0E 0F	.....
	0010	10 11 12 13 14 15 1C 1D 1E 1F	.....
○	0020	20 21 22 23 24 25 2C 2D 2E 2F	!"#\$%&'()*+,-./	○
	0030	30 31 32 33 34 35 3C 3D 3E 3F	0123456789:;<=>?	
	0040	40 41 42 43 44 45 4C 4D 4E 4F	@ABCDEFGHIJKLMNO	
○	0050	50 51 52 53 54 55 5C 5D 5E 5F	PQRSTUVWXYZ[\]^_	○
○				○
○				○
○				○



Press the SEL/MENU/EXIT key to stop printing. Pressing the key again will resume printing. Press the FF/LOAD key in the pause state to execute a form feed.

Printing Alignment Adjustment

This function adjusts the alignment of bi-directional printing.

In bi-directional printing, characters that are printed from left to right tend to misalign with characters printed from right to left as shown below:

```
| This example shows how printing looks
| when characters are vertically
| misaligned. Note that the left
| margin is not straight.
```

The vertical alignment function corrects the vertical character displacement that sometimes occurs with bi-directional printing and results in a poor appearance, especially in printing tables. This function is defined as one of the power-on initiated test functions. If you notice misaligned printing, use this function to check and correct the vertical print alignment.

1 To enter the Printing Alignment Adjustment Function:

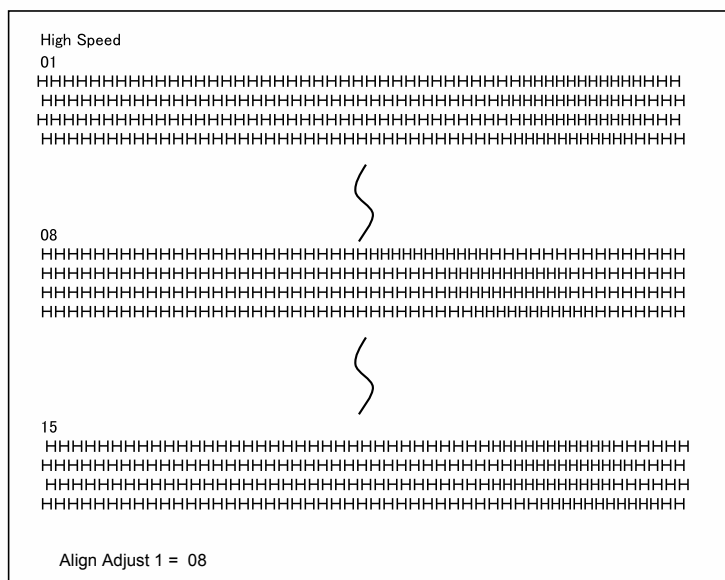
- a) Make sure that the tractors are loaded with continuous feed paper and that the paper select lever is set forward.
- b) Turn the printer off.
- c) Turn the printer back on while pressing the **LF** key.



Do not press any keys alone or in combination, except for pressing the LF key alone when turning the printer on, to avoid initiating unexpected tests not permitted for the user.

2 Adjust the vertical print alignment at High Speed:

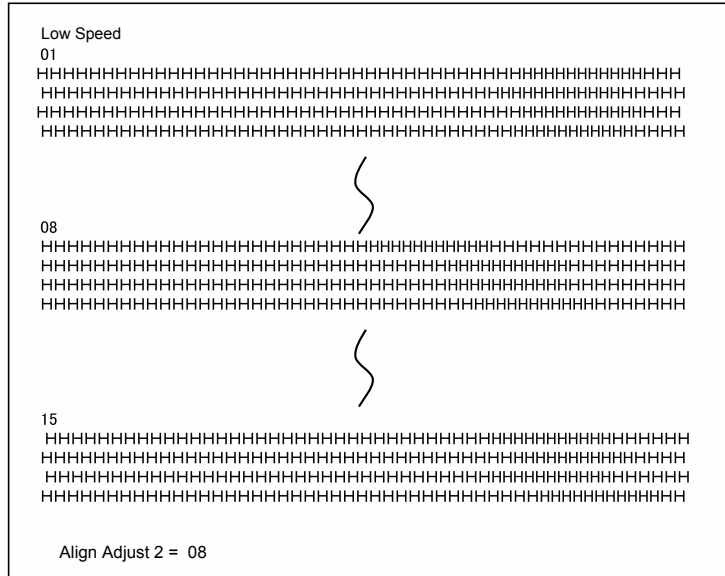
After Paper is loaded, the format of adjustment for Bi-directional Alignment of High Speed is printed and the paper will automatically advance for viewing after the printing is complete. The message of "Bi-Dir Align Adjust1 = xx" is printed.



An adjustment value is chosen using the **PARK/PRINT/▼** or the **TEAR/▲** key. The adjustment range is "01-15", and the center value is "08". By pressing SEL/MENU/EXIT key, the adjustment value for High Speed is determined and saved.

3 Adjust the vertical print alignment at Low Speed:

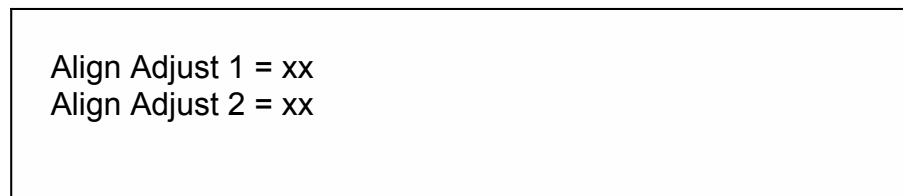
Adjustment of Bi-directional Alignment for Low Speed is performed immediately, after the adjustment value for High Speed is saved. After Paper is loaded, the format of adjustment for Bi-directional Alignment of Low Speed is printed and the paper will au-tomatically advance for viewing after the printing is complete. The message of "Bi-Dir Align Adjust 2 = xx" is printed.



An adjustment value is chosen using **PARK/PRINT/▼** or the **TEAR/▲** key. The adjustment range is "01-15", and the center value is "08". By pressing SEL/MENU/EXIT key, the adjustment value for Low Speed is determined and saved.

4 Printing new values:

The new adjustment values of Bi-directional Alignment is printed using 10cpi, Draft. The paper is automatically advance for viewing after the printing is complete.



5 Exit from Printing Alignment Adjustment mode:

Turn off the printer.

Top of Form Adjustment Function

Print positions often change gradually when you use the printer over long periods of time. The ADJUST function allows you to adjust these positions by fine-tuning the Top of Form origin.

1 To enter Top Adjustment Function:

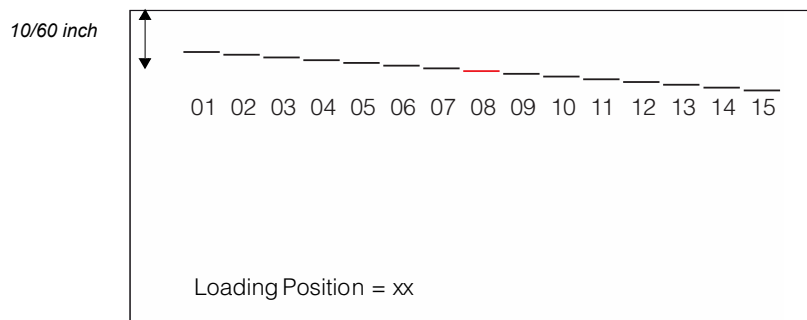
- Make sure that the tractors are loaded with continuous feed paper and that the paper select lever is set forward.
- Turn the printer off.
- Turn the printer back on while pressing the **FF/LOAD** key.



Do not press any keys alone or in combination, except for pressing the FF/LOAD key alone when turning the printer on, to avoid initiating unexpected tests not permitted for the user.

2 To set Top Adjustment value:

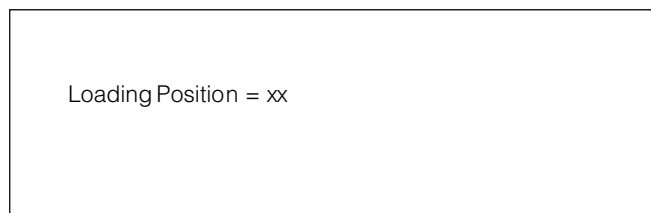
- The format of adjustment Loading Position is printed as below, 15 patterns of adjustment Loading Position are printed.



- The format of Loading Position is printed and the paper is automatically advanced for viewing after the printing is complete. The message of "Loading Position Pos = xx" is printed.
- Use the **PARK/PRINT/▼** or the **TEAR/▲** key to choose the new top position. The adjustment range is "01-15", and the center value is "08". It is possible to set different values for Tractor and Manual.

3 Printing the new value:

By pressing **SEL/MENU/EXIT** key, the adjustment value for Loading Position is determined and saved. The new adjustment values for Loading Position is printed. The paper is automatically advanced for viewing after the printing is complete. After ejecting a form, the message "Loading Position = xx" is printed.



"xx" is new adjustment value.

4 Exit the Top Adjustment mode:

Turn the printer off to exit the Top Adjustment mode.

Setting of The First Dot Position on the Left Side

Print positions often change gradually when you use the printer over long periods of time. This adjust function allows you to adjust these positions by fine-tuning the Left Margin origin.

1 To enter Adjustment Function:

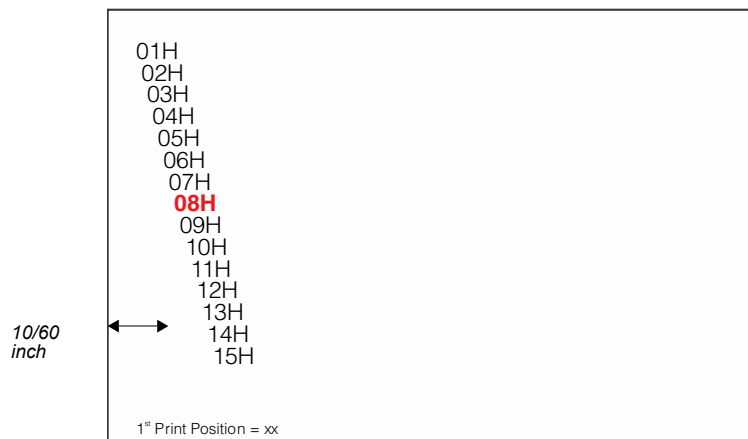
- Make sure that the tractors are loaded with continuous feed paper and that the paper select lever is set forward.
- Turn the printer off.
- Turn the printer back on while pressing the **TEAR** key.



Do not press any keys alone or in combination, except for pressing the TEAR key alone when turning the printer on, to avoid initiating unexpected tests not permitted for the user.

2 To set Adjustment value:

- The format of adjustment of setting of the first dot Position on the left side is printed as below, 15 patterns of adjustment Position are printed.

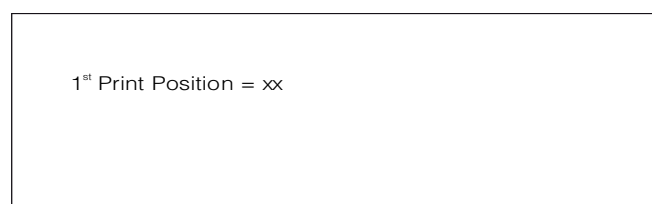


- After the format of setting of the first dot Position on the left side is printed, the paper is automatically advanced for viewing after the printing is complete. The message of "1st Print Position Pos = xx" is printed.

- Use the **PARK/PRINT/▼** or the **TEAR/▲** keys to choose the new first dot position on the left side. The adjustment range is "01-15", and the center value is "08". It is possible to set different values for Tractor and Manual.

3 Printing new value:

By pressing **SEL/MENU/EXIT** key, the adjustment value for the first dot position on the left side is determined and the adjustment value is saved. The new adjustment value of the first dot position on the left side is printed. The paper is automatically advanced for viewing after the printing is complete. After ejecting a form, the message "1st Print Position = xx" is printed.





"xx" is new adjustment value.

4 Exit the setting of the first dot position on the left side mode:

Turn the printer off to exit this mode.

Menu access

You can restrict the access to the Set-Up functions to avoid accidentally changing the Set-Up options.

1 To enter Menu Access Function:

- Make sure that the tractors are loaded with continuous feed paper and that the paper select lever is set forward.
- Turn the printer off.
- Turn the printer back on while pressing the **SEL/MENU/EXIT** and **SHIFT** keys.

i Do not press any keys alone or in combination, except for pressing the **SEL/MENU/EXIT** and **SHIFT** key alone when turning the printer on, to avoid initiating unexpected tests not permitted for the user.

2 Changing Menu Access:

Press the **FF/LOAD/Micro Feed Up/►** key to print the current menu access value.

3 Use the **PARK/PRINT/▼** or the **TEAR/▲** keys to select the desired parameter.

Menu-Access Mode	
Button	Menu-Access Action
PARK	Move cursor Down to the next Function or Value
TEAR	Move cursor Up to the next Function or Value
FF/LOAD	Select the Option or Value and Move cursor Right
LF	Select the Option or Value and Move cursor Left
SEL	Select the Option or value and Move to SAVE&EXIT

<FUNCTIONS>	
MENU-ACCESS	
	ALL FUNCTION
	NO ACCESS

- Press the **SEL/MENU** key to select the desired menu access parameter and to activate the **SAVE&EXIT** position.
- Press the **SEL/MENU** key again to save the new value and exit the Set-Up mode and return to the Ready state. This setting remain in effect until the next time they are changed.

Setting Setup Mode to Default Value (Standard)

This function can initialize the printer to Standard default.

1 To enter setting setup mode to default value (standard):

- a) Turn the printer off.
- b) Turn the printer back on while simultaneously pressing the **TEAR**, **PARK** and **QUIET** keys.



Do not press any keys alone or in combination, except for pressing the TEAR, PARK and QUIET key alone when turning the printer on, to avoid initiating unexpected tests not permitted for the user.

2 Exit the setting setup mode to default value (standard):

After the setting completes, the printer will automatically restart in the power-up state.

Maintenance

Your printer requires very little care. Occasional cleaning and replacement of the ribbon cartridge are all that is required (approximately every 6 months or 300 hours of operation, whichever is sooner).

Lubrication of the printer is not usually necessary. If the printhead carriage does not move smoothly back and forth, clean the printer in the manner described in this chapter. If the problem continues, contact your dealer to determine whether lubrication may be necessary.

Cleaning

The housing and the top cover of the printer help protect it against dust, dirt, and other contaminants. However, paper produces small particles that accumulate inside the printer. This section explains how to clean and vacuum the printer and how to clean the paper bail rollers.

It is easier to clean the printer when the cover is open.

Cleaning and Vacuuming the Printer

If the printhead carriage does not move smoothly back and forth or paper particles have accumulated in the printer, clean the printer.



To avoid any possibility of injury, before cleaning the printer, turn off the power to both the printer and the computer, and unplug the printer.

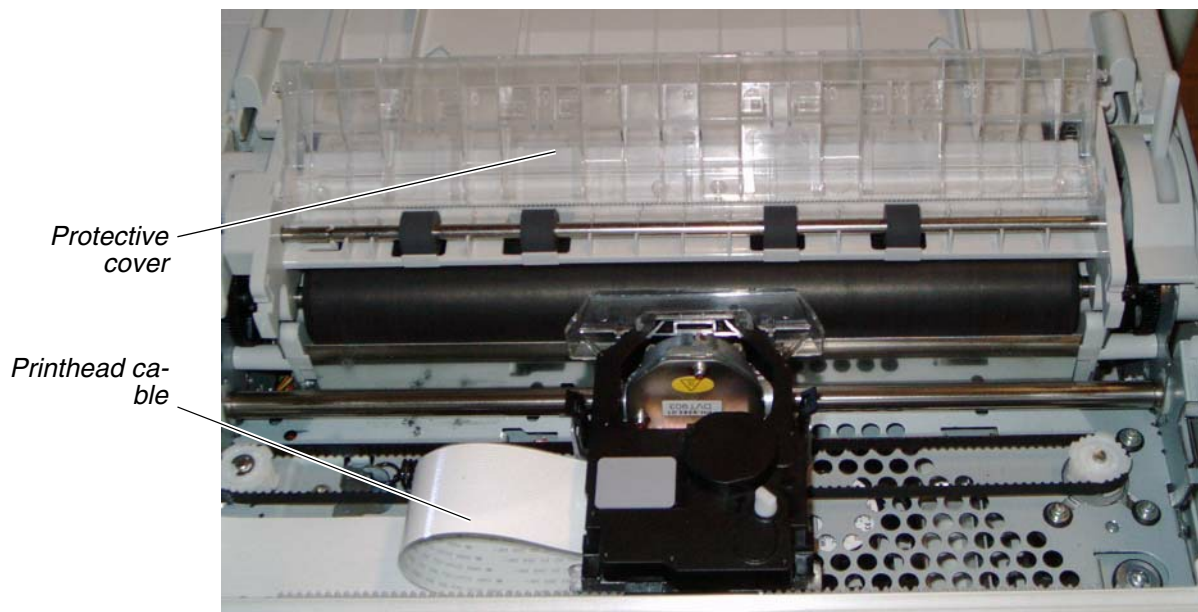
To clean and vacuum the printer:

- 1** Remove any paper from the printer. Make sure that the power is off, and then disconnect the printer power cord.
- 2** Using a soft vacuum brush, vacuum the exterior of the printer. Also vacuum the cut sheet edge.
- 3** Use a soft, damp cloth to wipe the exterior of the printer, including the cover. A mild detergent may be used.

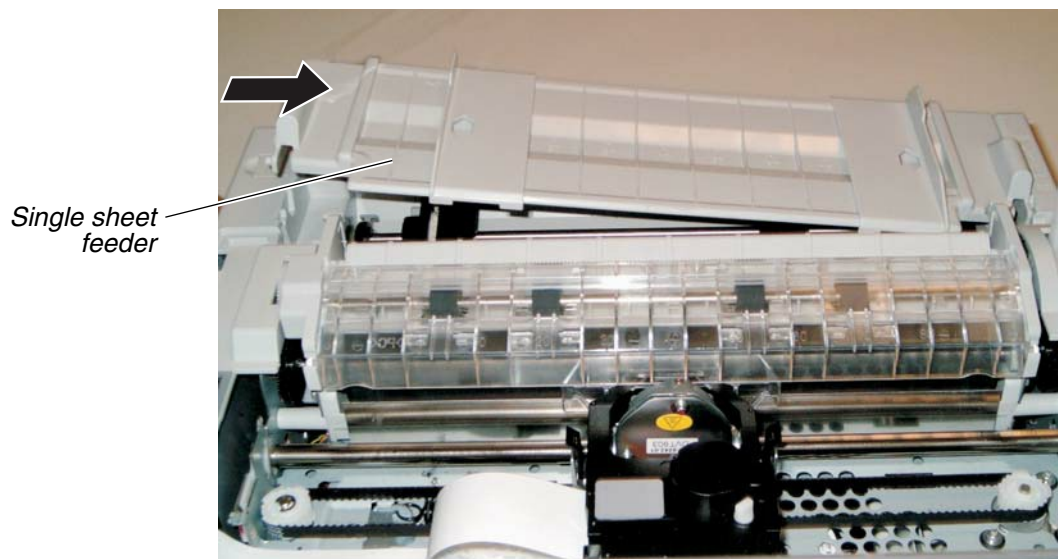


Do not use solvents, kerosene, or abrasive cleaning materials that may damage the printer.

- 4 Open the cover of the printer and the protective cover of the platen and remove the ribbon cartridge. Using a soft vacuum brush, gently vacuum the platen, the printhead carriage and shaft, and surrounding areas. You can easily slide the printhead to the left or right when the power is off. Be careful not to press too hard on the flat ribbon cable that extends from the printhead carriage.



- 5 Re-install the ribbon cartridge (see “Installing the Ribbon Cartridge” on page 5-5).
- 6 Remove the single sheet feeder and clean the form tractors and the surrounding areas.



- 7 Re-install the single sheet feeder.

Cleaning the Paper Rollers

Clean the platen and paper bail rollers occasionally or when stains or smudges appear on the paper. Use a mild detergent as appropriate.



Do not use alcohol to clean the platen or the rollers. Alcohol may cause the rubber to harden.

To clean the the rollers and the platen:

- 1** Apply a small amount of water to a soft cloth. Avoid spilling liquid inside the printer.
- 2** Place the cloth against the platen and manually rotate the platen knob.
- 3** Repeat this procedure for each roller.
- 4** To dry the platen, place a dry cloth against the platen and the rollers and manually rotate the platen knob.

Replacing the Ribbon Cartridge

If printing is too light because of ribbon wear, replace the ribbon cartridge. Appendix E, “Supplies and Options” lists the order number for the ribbon cartridge.

The replacement is almost the same as the installation except that it involves removing the old ribbon cartridge and removing the new ribbon cartridge from the carton.

Removing the Ribbon Cartridge

To remove the ribbon cartridge:

- 1** Turn off the printer.
- 2** Open the top cover and the protective cover of the platen.

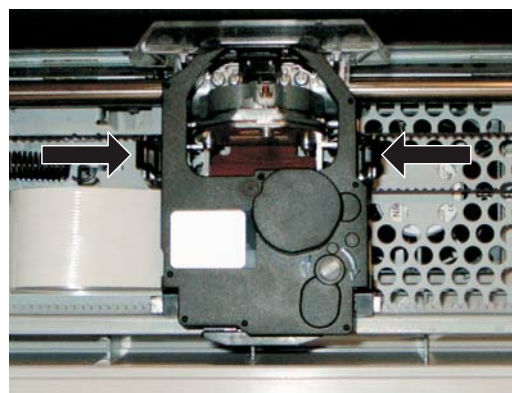


The printhead may be hot if you have been printing recently.

- 3** Move the print gap lever to position 6.



- 4** To remove the ribbon cartridge, press the ribbon release levers located on the sides of the cartridge and carefully lift the cartridge out of the printer.



Installing the Ribbon Cartridge

Proceed as follows to install the ribbon cassette.



Only use ribbon cassettes from the manufacturer as products from other manufacturers may damage the printhead or the ribbon drive.

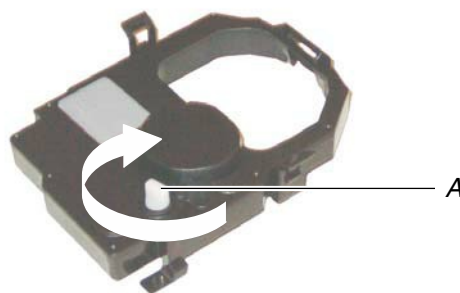
- 1** Remove the ribbon cassette from its packaging.
- 2** Open the printer cover.



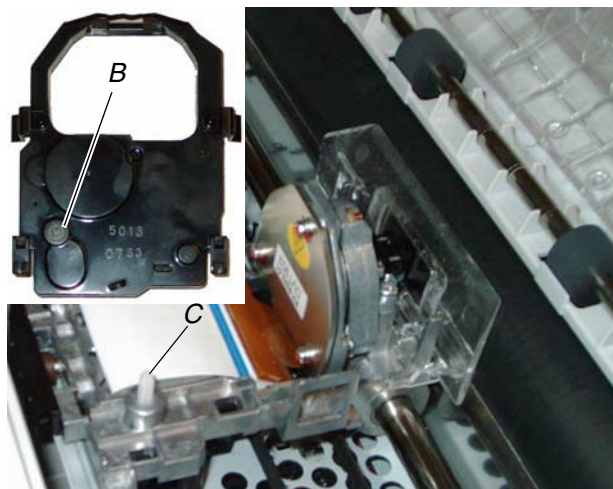
- 3** Adjust the printhead to the center of the print roller.



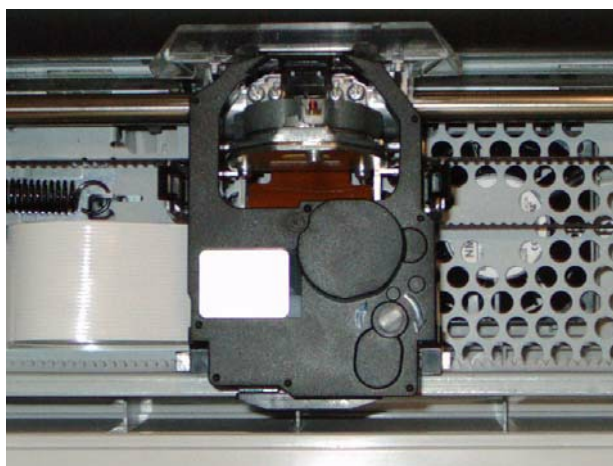
- 4** Turn the tension knob **A** in the direction of the arrow in order to take up slack of the ribbon.



- 5** Insert the recess **B** on the bottom of the ribbon cassette into the holding pin **C** of the mounting.



- 6** Push the cassette into its mounting until it clicks into position.



i *When placing the new ribbon cartridge on the carriage, make sure that the thin ribbon does not become bunched or folded at the printhead. Readjust the print gap to achieve good print quality.*

- 7** Close the cover of the printer.
- 8** Use the printing test function to check printing. See “Printing Test Function” on page 4-21 in chapter 4 “Special mode”.

Replacing the Print Head

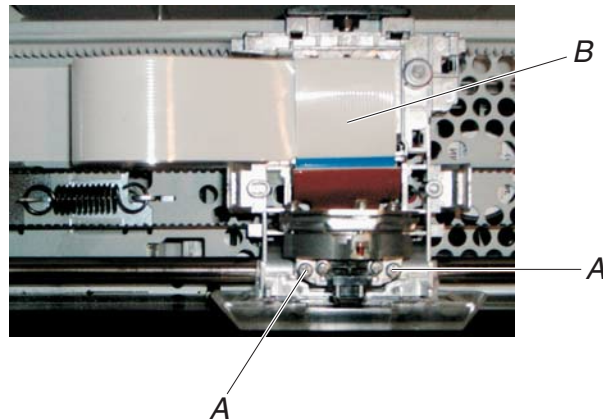
If a specific dot is not printed for all characters, replace the printhead.



The printhead may be hot if you have been printing recently.

To remove the printhead:

- 1 Turn off the printer.
- 2 Open the cover and the protective cover of the platen and remove the ribbon cartridge (see section “Removing the Ribbon Cartridge” on page 5-4).
- 3 Remove the two screws **A** from the printhead.
- 4 Lift the printhead and disconnect the flexible cable **B**.



Be careful because the printhead cables can easily be damaged.



We recommend that a technician perform this procedure.

To install the printhead:

- 1 Connect the flexible cables to each connector. Make sure to push them fully into the connectors; do not kink the cables.



Be careful because the printhead cables can easily be damaged.

- 2 Ease the new printhead down into the mounting. Fasten the two screws **A**.
- 3 Install the ribbon cartridge (see section “Installing the Ribbon Cartridge” on page 5-5).

Troubleshooting

Your printer is extremely reliable, but occasional problems may occur. You can solve many of these problems yourself, using this chapter. If you encounter problems that you cannot resolve, contact your dealer or service partner for assistance.

This chapter is organized as follows:

- Solving problems
- Diagnostic functions

Solving problems

The tables in this section describe common printer problems and their solutions. The following types of problems are considered:

- Print quality problems
- Paper handling problems
- Operating problems
- Printer failure

Print Quality Problems and Solutions

Poor print quality or other printing problems are often caused by incorrect printer set-up or incorrect software settings. A gradual decrease in print quality usually indicates a worn ribbon. The following table identifies common print quality problems and suggests solutions.

Problem	Solution
Printing is too light or too dark.	<p>Make sure that the ribbon cartridge is properly installed and that the ribbon feeds smoothly.</p> <p>Make sure that the Print Gap lever is set for the thickness of your paper. Refer to Chapter 2, <i>"Paper handling"</i>.</p> <p>Check ribbon wear. Replace the ribbon if necessary.</p>
Smears and stains appear on the page.	<p>Make sure that the Print Gap lever is set for the thickness of your paper. Refer to the section <i>"Paper Thickness and Number of Copies"</i> in Chapter 2, <i>"Operating the printer"</i>.</p> <p>Check ribbon wear. Replace the ribbon if necessary.</p> <p>Check whether the tip of the printhead is dirty. Clean the head with a soft cloth if necessary.</p> <p>The printhead should be changed by a technician.</p>
Printing is erratic or the wrong characters are printed. Many "?" or unexpected characters are printed.	<p>Make sure that the interface cable is securely connected to both the printer and computer.</p> <p>Make sure that the printer Emulation selected in your software is the same as the Emulation selected on the printer. For information on printer emulations, refer to the section <i>"PRINTER CONTROL menu"</i> in Chapter 4, <i>"Special mode"</i>.</p>
The page is blank.	<p>Make sure that the ribbon cartridge is properly installed. Refer to the section <i>"Installing the Ribbon Cartridge"</i> in Chapter 5, <i>"Maintenance"</i>.</p>
Printing is vertically misaligned (jagged).	<p>Use the printer's vertical alignment function to check the vertical print alignment. If necessary, adjust the print alignment. See the section <i>"Printing Alignment Adjustment"</i> in Chapter 4, <i>"Special mode"</i>.</p>
Printing is too light, probably you hear sporadically "ticktack".	<p>As the ribbon may be blocked or stuck, please try replacing the ribbon.</p>

Problem	Solution
The top margin is wrong.	<p>The top margin is the sum of the printer's top-of-form setting, the software-specified top margin, and the printer's TOP-MARGIN setting. Proceed as follows:</p> <ul style="list-style-type: none"> • Make sure that the top-of-form setting is correct. The factory default is 0 mm (0 inch). • Check the software-specified top margin. Refer to your software documentation. • Check the printer's TOP-MARGIN setting. See the section "<i>COMMON (PUSH TRAC) menu</i>" or "<i>FRICTION menu</i>" in Chapter 4, "<i>Special mode</i>".
Lines are double spaced instead of single spaced.	Change the CR CODE setting in the printer Set-Up mode to CR=LF+CR. See " <i>SET-UP menu</i> " in Chapter 4, " <i>Special mode</i> ".
The printer overprints on the same line.	Change the CR CODE setting in the printer Set-Up mode to CR=LF+CR. See " <i>SET-UP menu</i> " in Chapter 4, " <i>Special mode</i> ".
The next print line starts where the previous line ended instead of at the left margin.	Change the CR CODE setting in the printer Set-Up mode to LF=LF+CR. See " <i>SET-UP menu</i> " in Chapter 4, " <i>Special mode</i> ".
The printer overprints on the same line while the next print line starts where the previous line ended instead of at the left margin.	Change the CR CODE setting in the printer Set-Up mode to CR=LF+CR and LF=LF+CR. See " <i>SET-UP menu</i> " in Chapter 4, " <i>Special mode</i> ".

Paper Handling Problems and Solutions

The following table describes common paper handling problems and suggests solutions. See the section “*Paper handling*” in Chapter 2, “*Operating the printer*” for detailed procedures on loading and using paper.

Problem	Solution
Paper cannot be loaded or fed.	<p>Make sure that the Print Gap select lever located on the top right of the printer is set correctly. Move the lever to the rear for single sheets or to the front for continuous forms.</p> <p>Make sure that the paper covers the paper-out sensor, (i.e., the left paper edge is within 60 mm from the left edge).</p>
Paper jams while loading.	<p>Turn off the printer and remove the jammed paper.</p> <p>Remove any obstructions from the paper path.</p> <p>Make sure that the Print Gap lever is set for the thickness of your paper. See “<i>Paper Thickness and Number of Copies</i>” in Chapter 2, “<i>Operating the printer</i>”.</p> <p>Make sure that the paper is not folded, creased, or torn.</p> <p>Make sure that the left and right tractors are set so that the continuous forms are stretched taut. See “<i>Fanfold paper</i>” in Chapter 2, “<i>Operating the printer</i>”.</p>
Paper jams while printing.	<p>Turn off the printer and remove the jammed paper.</p> <p>Remove any obstructions from the paper path.</p> <p>Make sure that the Print Gap lever is set for the thickness of your paper. See “<i>Paper Thickness and Number of Copies</i>” in Chapter 2, “<i>Operating the printer</i>”.</p> <p>For continuous forms, make sure that the incoming and outgoing paper stacks are correctly placed. Paper should feed straight. See “<i>Feeding and Positioning Paper</i>” in Chapter 2, “<i>Operating the printer</i>”.</p>
Paper slips off the forms tractors or the perforated holes of the paper tear during printing.	<p>Make sure that the forms tractors are positioned correctly for the width of your paper and that the perforated holes of the paper fit directly over the tractor pins. See “<i>Fanfold paper</i>” in Chapter 2, “<i>Operating the printer</i>”.</p>

Operating Problems and Solutions

The following table identifies common operating problems and suggests solutions. If you cannot resolve a problem, contact your dealer.

Problem	Solution
The power does not turn on.	<ul style="list-style-type: none"> ▶ Make sure that the power cord is securely connected to both the printer and the battery. Make sure that the power outlet is functional. If not so, use other outlet. ▶ Turn the power off. Wait a minute and then turn the printer on again. If the printer still has no power, contact your dealer.
The printer is on but it will not print.	<ul style="list-style-type: none"> ▶ Make sure that the Ready indicator is lit. See <i>“Operations of the Control Panel”</i> in Chapter 2, <i>“Operating the printer”</i>. ▶ If you use the interface cable make sure it is securely connected to both the printer and the computer. ▶ If the ALARM indicator is lit, load paper. See <i>“Loading paper”</i> in Chapter 2, <i>“Operating the printer”</i>. ▶ Run the printer printing test. If the printing test executes normally, the problem is caused by the interface, the computer, incorrect printer settings, or incorrect software settings. See <i>“Printing Test Function”</i> in Chapter 4, <i>“Special mode”</i>. ▶ Make sure that the printer Emulation selected in your software is the same as the Emulation selected on the printer. See <i>“PRINTER CONTROL menu”</i> in Chapter 4, <i>“Special mode”</i>.
Paper select lever error	<p>If paper is loaded and the paper select lever is moved backward or forward, the printer turns offline, the ALARM LED lights and the CHARACTER PITCH LED 10 blinks.</p> <ul style="list-style-type: none"> ▶ Switch the paper select lever back to its original position.

LED states in error conditions

LEDs light up depending on the following error types.

LEDs	Status	Description	Recovery
ALARM Other LEDs	on Normal status	No paper loaded.	Load paper.
ALARM Other LEDs	on Normal status	Paper near end.	Make sure that enough paper is loaded.
ALARM PRINT QUALITY CHARACTER PITCH 10 12 15 17 20 Prop	on all off off off blinking off off off	A paper jam has occurred.	Remove the jammed paper.
ALARM PRINT QUALITY CHARACTER PITCH 10 12 15 17 20 Prop	on all off blinking off off off off	Paper is loaded into the printer and the paper select lever was moved backward or forward.	Switch the paper select lever back to its original position.
ALARM PRINT QUALITY CHARACTER PITCH 10 12 15 17 20 Prop	on all off off off off blinking off	An interface error has occurred while transferring data.	Press the SEL key twice.

Printer Failures

A user cannot generally resolve a problem involving defective printer hardware. On detecting a fatal error, the printer will:

- Stop printing
- Turn the Ready (SEL/MENU) indicator off
- Blink the ALARM indicator

Power off and on again the printer, to recover a fatal error. If you cannot resolve the problem, contact your dealer or service partner.

Diagnostic Functions

The printer diagnostic functions are printing test, hex-dump mode and printing alignment adjustment.

- **PRINTING TEST** tells you whether the printer hardware is functioning correctly. If the printer hardware is functional, any problems you are having are probably caused by incorrect printer settings, incorrect software settings, the interface, or the computer.
- **HEX-DUMP MODE** allows you to determine whether the computer is sending the correct commands to the printer, and whether the printer is executing the commands correctly. This function is useful to programmers or others who understand how to interpret hex dumps.
- **PRINTING ALIGNMENT ADJUSTMENT** allows you to check and, if necessary, correct the printer's vertical print alignment in bi-directional mode.

For details on using these functions, all of which are available in the printer special mode, see the section *"Using the Diagnostic Functions"* in Chapter 4, *"Special mode"*.

Specifications

This appendix provides the physical, functional, and performance specifications for your printer. It also contains detailed paper specifications.

Printer specifications

Item																			
Printing method	24-wire dot matrix impact printer																		
Character pitch	10, 12, 15, 16.6, 17, 20 characters/inch and proportional type (emulation-dependent)																		
Print width	80 characters/line at 10 cpi 96 characters/line at 12 cpi 137 characters/line at 17 cpi																		
Print speed	<table><tr><td><i>Carriage Speed</i></td><td><i>Draft</i></td><td><i>LQ</i></td></tr><tr><td>39.9 / 13.3 ips</td><td>399 cps</td><td>133 cps at 10 cpi</td></tr><tr><td>39.9 / 13.3 ips</td><td>479 cps</td><td>160 cps at 12 cpi</td></tr><tr><td>26.7 / 13.3 ips</td><td>400 cps</td><td>200 cps at 15 cpi</td></tr><tr><td>20 / 13.4 ips</td><td>343 cps</td><td>229 cps at 17.1 cpi</td></tr><tr><td>20 / 13.3 ips</td><td>400 cps</td><td>267 cps at 20 cpi</td></tr></table>	<i>Carriage Speed</i>	<i>Draft</i>	<i>LQ</i>	39.9 / 13.3 ips	399 cps	133 cps at 10 cpi	39.9 / 13.3 ips	479 cps	160 cps at 12 cpi	26.7 / 13.3 ips	400 cps	200 cps at 15 cpi	20 / 13.4 ips	343 cps	229 cps at 17.1 cpi	20 / 13.3 ips	400 cps	267 cps at 20 cpi
<i>Carriage Speed</i>	<i>Draft</i>	<i>LQ</i>																	
39.9 / 13.3 ips	399 cps	133 cps at 10 cpi																	
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26.7 / 13.3 ips	400 cps	200 cps at 15 cpi																	
20 / 13.4 ips	343 cps	229 cps at 17.1 cpi																	
20 / 13.3 ips	400 cps	267 cps at 20 cpi																	
Line spacing	1, 2, 3, 4, 5, 6, 8, 12 lines/inch																		
Resolution	360 vertical × 360 horizontal dots per square inch																		
Character density	<table><tr><td>10 cpi</td><td><i>vertical x horizontal</i></td></tr><tr><td>Draft</td><td>24 x 12</td></tr><tr><td>Letter</td><td>24 x 36</td></tr></table>	10 cpi	<i>vertical x horizontal</i>	Draft	24 x 12	Letter	24 x 36												
10 cpi	<i>vertical x horizontal</i>																		
Draft	24 x 12																		
Letter	24 x 36																		
Fonts	Draft, Roman, Sans Serif, Courier, OCR-A, OCR-B, Prestige, Script, Orator, Gothic, Souvenir																		
Barcodes	UPC/A, UPC/E, EAN8, EAN13, Code 39, Code 128, Codabar, Interleaved 2 of 5, Industrial 2 of 5, Postnet																		

Item	Narrow model	Wide model
Character sets	<p>ISO USA, ISO UK, ISO France, ISO Germany, ISO Italy, ISO Sweden, ISO Norway, ISO Spain, ISO Portugal, Epson USA , Epson France, Epson Germany, Epson UK, Epson Denmark, Epson Sweden, Epson Italy, Epson Spain, Epson Japan, Epson Norway, Epson Denmark II, Epson Spain II, Epson Latin America, Epson Korea, Epson Legal, CRO-ASCII, Arabic Farsi, Arabic Urdo, Greek DEC, Greek ELOT 928, CP437 Latin US, CP737Greek, CP850 Latin1, CP851 Greek, CP852 Latin2, CP857 Turkish, CP858 IBM with Euro, CP860 Portugal, CP861 Icelandic, CP863 French Canada, CP864 Arabic, CP864 Arab. Extended, CP865 Nordic, CP866 Cyrillic, CP866 Bulgaria, Siemens Turkish, DEC Turkish, CP1250 Win Latin2, CP1251 Win Cyrillic, CP1252 Win Latin1, CP1253 Win Greek, CP1254 Win Turkish, 8859-1 Latin1, 8859-1, Latin1(SAP), 8859-2 Latin2, 8859-5 Cyrillic, 8859-7 Greek, 8859-9 Turkish, 8859-15 Latin9(Euro)BRASCII, Abicomp, Roman 8, Coax/Twinax(Hebrew), New-437(Hebrew)</p> <p>NOTE: Code pages and Fonts support depend on supplied Font by the manufacturer. The Character Sets are emulation dependent</p>	
Interface	Parallel IEEE-1284 bidirectional Centronics, USB 2.0 Full Speed (12 Mbps)	
Interface option	Ethernet, Serial RS-232C	
Emulations	EPSON ESC/P2, IBM Proprinter X(L)24e OKI superset commands for both and emulations available	
Power supply	U.S.A./Canada 120 V $\pm 10\%$, 60 Hz $\pm 2\%$, Europe 230 V $\pm 10\%$, 50/60 Hz $\pm 2\%$	
Power consumption	at 100% throughput 40 VA (with Rolling ASCII) when idling 6.5 VA	
Sound pressure level L_{pAm}	≤ 55 dB(A) in LQ (ISO 7779)	
Dimensions	398 (W) x 330 (D) x 135 (H) mm	
Weight	6.7 kg	
Approvals	UL 1950 (with deviation 3) Listed, CSA C22.2 NO.950 (with deviation 3) Certified, FCC Class B (J subpart of 15) Certified, CE marking, EMC Immunity: IEC61000-4-2 level3, Energy Star	

Paper specifications

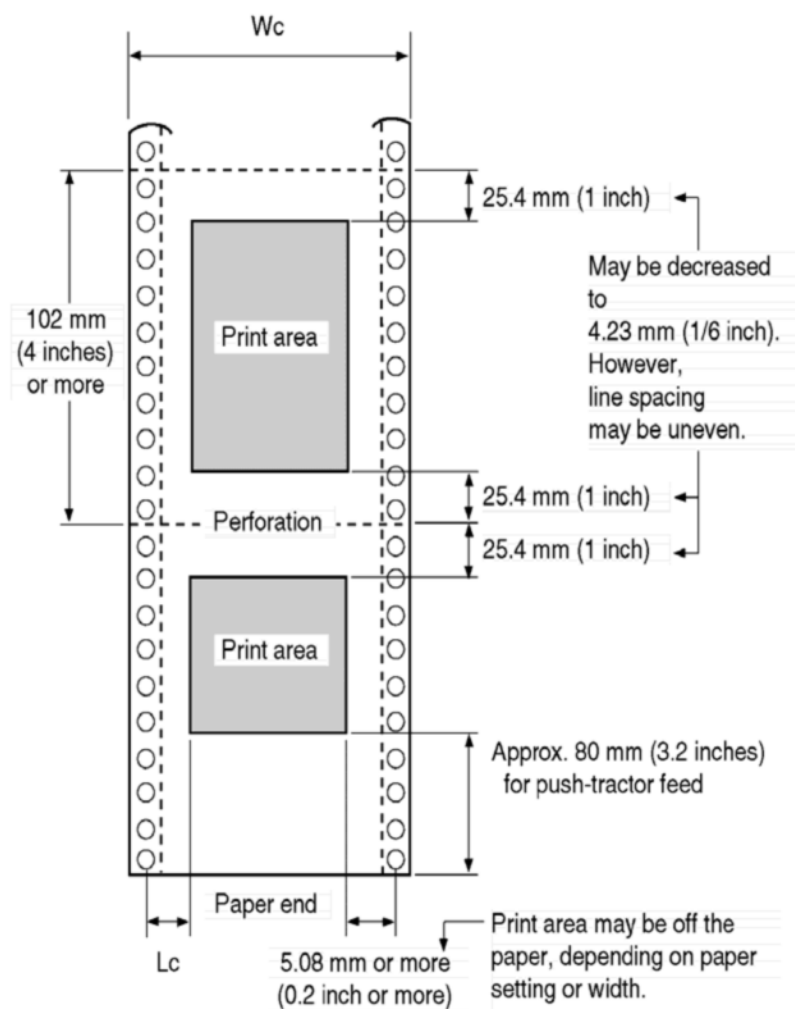
Only use paper that corresponds to the paper specifications and test new sorts of paper before use.

Paper type		
Continuous Forms	Width Length No. of copies Form thickness (max.)	102–267 mm (4–10.5 in) 102 mm (4 in) up to 559 mm (22 in) 1 to 5 0.35 mm (0.014 in)
Single Sheets	Width Length Thickness	102–267 mm (4–10.5 in) 76–364 mm (3–14.3 in) 0.35 mm (0.014 in)

Print Area

This section illustrates the recommended print area for single sheets and continuous forms.

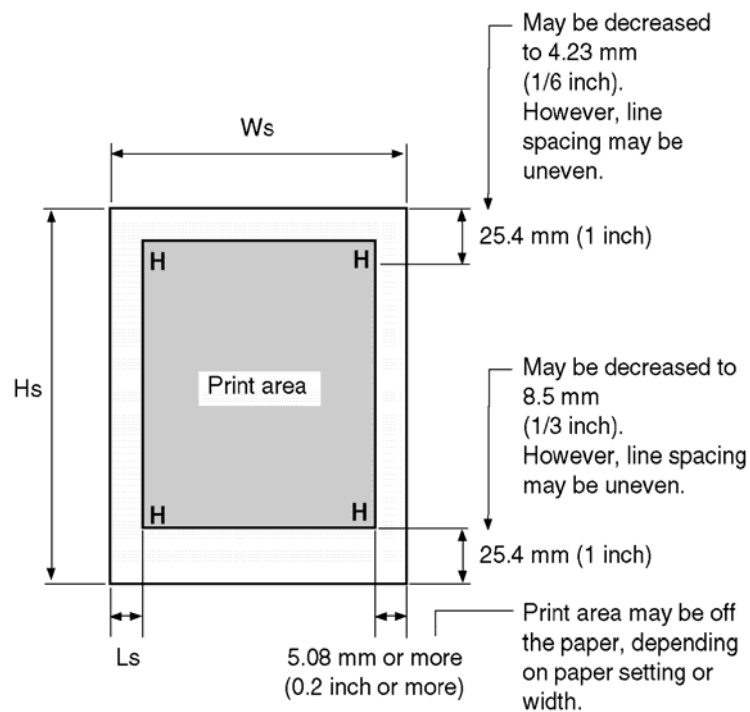
Continuous forms



Narrow model: W_c 102 to 267 mm (4 to 10.5 in)

L_c 5.08 to 25.4 mm (0.2 to 1 in)

Single sheets



Narrow model: W_s 102 to 267 mm (4 to 10.5 in)

H_s 76 to 364 mm (3 to 14.3 in)

L_s 5.08 to 32 mm (0.2 to 1.26 in)

Paper Thickness

Paper thickness is given by the weight of the paper in either grams per square meter (g/m^2) or in pounds per bond (lbs/bond). The following table shows the allowable paper thickness for one-part paper or for each sheet of multipart paper. The total thickness must not exceed 0.35 mm (0.014 inch).

The weight of carbonless or carbon-backed paper may vary, depending on the paper manufacturer. When using paper of borderline thickness, test the paper before running a job.

Type of Paper	Number of Parts	Thickness
One-Part Carbonless	Single	47–81 g/m^2 (12–22 lbs/bond)
Two-Part Carbonless	Top	40–64 g/m^2 (11–17 lbs/bond)
	Bottom	40–81 g/m^2 (11–22 lbs/bond)
Three-Part Carbonless	Top	40–64 g/m^2 (11–17 lbs/bond)
	Middle	40–64 g/m^2 (11–17 lbs/bond)
	Bottom	40–81 g/m^2 (11–22 lbs/bond)
Four-Part Carbonless	Top	40–64 g/m^2 (11–17 lbs/bond)
	Middle	40–64 g/m^2 (11–17 lbs/bond)
	Middle	40–64 g/m^2 (11–17 lbs/bond)
	Bottom	40–81 g/m^2 (11–22 lbs/bond)
Five-Part Carbonless	Top	40–64 g/m^2 (11–17 lbs/bond)
	Middle	40–64 g/m^2 (11–17 lbs/bond)
	Middle	40–64 g/m^2 (11–17 lbs/bond)
	Middle	40–64 g/m^2 (11–17 lbs/bond)
	Bottom	40–81 g/m^2 (11–22 lbs/bond)
Two-Part Carbon-Backed	Top	40–64 g/m^2 (11–17 lbs/bond)
	Bottom	40–81 g/m^2 (11–22 lbs/bond)
Three-Part Carbon-Backed	Top	40–64 g/m^2 (11–17 lbs/bond)
	Middle	40–64 g/m^2 (11–17 lbs/bond)
	Bottom	40–81 g/m^2 (11–22 lbs/bond)
Four-Part Carbon-Backed	Top	40–64 g/m^2 (11–17 lbs/bond)
	Middle	40–64 g/m^2 (11–17 lbs/bond)
	Middle	40–64 g/m^2 (11–17 lbs/bond)
	Bottom	40–81 g/m^2 (11–22 lbs/bond)

Five-Part Carbon-Backed	Top	40–64 g/m ² (11–17 lbs/bond)
	Middle	40–64 g/m ² (11–17 lbs/bond)
	Middle	40–64 g/m ² (11–17 lbs/bond)
	Middle	40–64 g/m ² (11–17 lbs/bond)
	Bottom	40–81 g/m ² (11–22 lbs/bond)
Two-Part Carbon-Interleaved	Top	40–64 g/m ² (11–17 lbs/bond)
	Carbon	Counted as one sheet
	Bottom	40–81 g/m ² (11–22 lbs/bond)
Three-Part Carbon-Backed	Top	40–64 g/m ² (11–17 lbs/bond)
	Carbon	Counted as one sheet
	Middle	40–64 g/m ² (11–17 lbs/bond)
	Carbon	Counted as one sheet
	Bottom	40–81 g/m ² (11–22 lbs/bond)

Carbon-backed: Do not use in high humidity environments.

Carbon-interleaved: Avoid using single sheets format in carbon-interleaved.

Interfaces

Your printer offers by default the possibility of operating either via a parallel interface or an USB interface. In addition, a serial interface (RS232C) or an Ethernet interface are available as options. Interfaces may vary from unit to unit depending on which configuration is purchased.

This appendix provides information you may need for wiring your own interface cables or for programming computer-to-printer communications. Most users do not need the information in this appendix. To simply connect your printer to your computer, follow the instructions in Chapter 2, *“Operating the printer”*, section *“Connecting the interface cable”*.

Parallel interface

This parallel interface can operate in the following two modes:

- **Unidirectional (forward channel) mode or compatible mode:** This printer supports a conventional Centronics interface.
- **Bidirectional (forward/reverse channel) mode or nibble mode:** This printer supports a bidirectional communication per Nibble mode of the IEEE 1284 Standard.

The cable connector at the printer side should be a shielded, Amphenol DDK57FE-30360 or equivalent.

The connector pin assignments are given in the following tables by modes. In the tables:

- “Input” denotes a signal from the computer to the printer.
- “Output” denotes a signal from the printer to the computer.
- The standard signal levels are 0.0 to +0.4 V (low), and +2.4 to +5.0 V (high).

Parallel Interface Pin Assignment

Pin No.	Signal	In/Out	Pin No.	Parallel	In/Out
1	nSTROBE	In	19	Signal GND	
2	DATA0	In	20	Signal GND	
3	DATA1	In	21	Signal GND	
4	DATA2	In	22	Signal GND	
5	DATA3	In	23	Signal GND	
6	DATA4	In	24	Signal GND	
7	DATA5	In	25	Signal GND	
8	DATA6	In	26	Signal GND	
9	DATA7	In	27	Signal GND	
10	nACK	Out	28	Signal GND	
11	BUSY	Out	29	Signal GND	
12	PE	Out	30	Signal GND	
13	SELECT	Out	31	nINIT	In
14	nAUTOFEED	Out	32	nERROR	Out
15	NC		33	Signal GND	
16	Signal GND		34	NC	
17	Chassis GND		35	+5V DC	Out
18	+5V DC	Out	36	nSELECT IN	In

Compatible mode

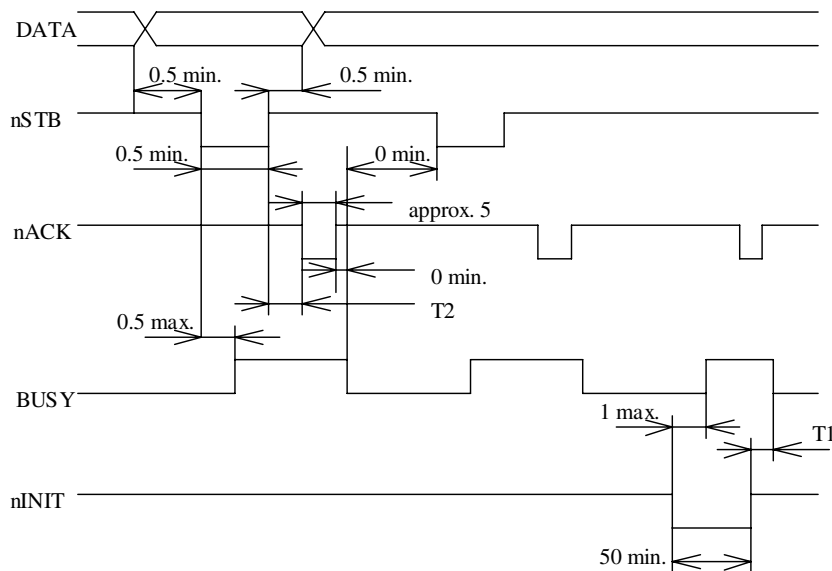
Pin No.	Signal name	Direction	Description
1	nSTROBE	Input	This signal is a strobe pulse for reading data (Data 0 to 7). The printer reads data when this signal is low. The pulse width must be 1 μ s or more at the receiving terminal.
2–9	Data 0 to 7	Input	Data 8 (pin 9) is the most significant bit; however, this pin is not used in 7-bit ASCII communications. Logical 1 signals must go high at least 1 μ s before the falling edge of the Data Strobe signal and must stay high for at least 1 μ s after the rising edge.
10	nACK	Output	This pulse signal indicates that the printer has received data and is ready to accept the next set of data. This signal is also sent when the printer is switched from offline to online.
11	BUSY	Output	Data cannot be received when this signal is high. This signal is high during data entry, when the printer is offline, when the buffer is full, or when an error occurs.
12	Paper Empty (PE)	Output	This signal is high when the printer is out of paper.
13	Select (SLCT)	Output	This signal is high when the printer is online.
14	nAUTO-FEED	Input	Not used
31	nINIT	Input	If this signal is low for more than 50 μ s, the printer is reset to the initial condition and is placed online. If the received data remains in the buffer, the printer continues to print until the buffer becomes empty.
32	nERROR		This signal is low when the printer is offline, paper is out, or when there is a printer error.
36	nSELECT IN	Input	Not used

Nibble mode

Pin No.	Signal name	Direction	Description
10	PtrClk (nACK)	Output	Reverse data transfer phase: This signal goes high when data being sent to the host is established. Reverse idle phase: This signal is set low then goes high to interrupt the host, indicating that data is available.
11	PtrBusy (BUSY)	Output	Reverse data transfer phase: Data bit 3, data bit 7, then forward path (host to printer) busy status.
12	AckDataReq (PE)	Output	Reverse data transfer phase: Data bit 2, then data bit 6. Reverse idle phase: This signal is set high until the host requests data and, after that, follows the Data Available signal.
13	Xflag (SELECT)	Output	Reverse data transfer phase: Data bit 1 then 5.
14	HostBusy (nAUTO- FEED)	Input	Reverse data transfer phase: This signal is set low when the host can receive data, and goes high when the host has received data. Following a reverse data transfer, the interface enters the reverse idle phase when the HostBusy signal goes low and the printer has no data. Reverse idle phase: This signal goes high when the Printer Clock signal goes low so that the interface re-enters the reverse data transfer phase. If it goes high with the 1284 Active signal low, the 1284 idle phase is aborted and the interface returns to the compatibility mode.
32	nDataAvail (nERROR)	Output	Reverse data transfer phase: This signal is set low when the printer is ready to send data to the host. During the data transfer, it is used as data bit 0 (LSB), then data bit 4. Reverse idle phase: This signal is used to indicate that data is available.

Data Transmission Timing

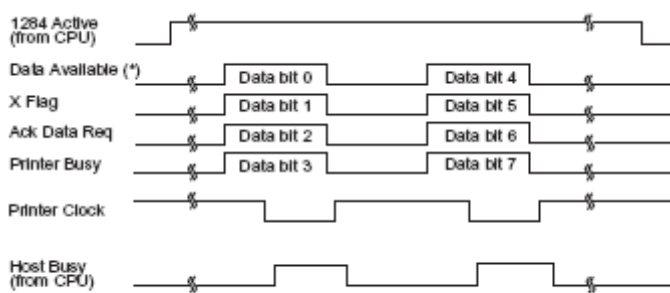
In unidirectional mode (conventional Centronics interface), this printer guarantees the received data when the Data and Data Strobe signals from the computer have the following timing with respect to the Busy and Acknowledge signals from the printer.



Notes:

- 1) All timing are in microseconds.
- 2) The minimum value for T1 (printer initializing time) is TBD millisecond.
- 3) The minimum value for T2 (printer processing time) is TBD microsecond.
- 4) Printer initialization occurs at the falling edge of nINIT.

In bidirectional mode (nibblemode), this printer can send data to the computer. Data is sent in units of four bits (nibble) using four output signal lines as data paths. The following outlines one byte of data sent during reverse data transfer phase in nibble mode.



* Data Available is assigned for the cable.

USB interface

The USB (Universal Serial Bus) interface has the following features:

- Full compliance with the Universal Serial Bus Specification Revision 2.0 for Full Speed Mode.
- USB Function Controller with two FIFO-based Endpoints:
 - One bidirectional Control Endpoint 0 (8 bytes)
 - One receive Endpoint 1 (1*64 bytes)
- The signaling bit rate is 12 MB/s (Full speed).

Descriptor

Standard Device Descriptor

Offset	Field	Size	Value	Description
0	bLength	Byte	0x12	Size of this descriptor in bytes.
1	bDescriptorType	Byte	0x01	Device descriptor type.
2	bcdUSB	Word	0x0210	USB Spec. release No. in BCD.
4	bDeviceClass	Byte	0x00	Class code
5	bDeviceSubClass	Byte	0x00	Sub Class code
6	bDeviceProtocol	Byte	0x00	Protocol code
7	bMaxPacketSize0	Byte	0x08	Maximum packet size for EP0
8	idVendor	Word	0x0C22	Vendor ID for Customer
10	idProduct	Word	0x08A6	Product ID for Project SDM500
12	bcdDevice	Word	0x0100	ROM Version in BCD
14	iManufacture	Byte	0x01	Index of string descriptor describing Manufacture.
15	iProduct	Byte	0x02	Index of string descriptor describing Product.
16	iSerialNumber	Byte	0x03,	Index of string descriptor describing the device's serial number.
17	bNumConfiguration	Byte	0x01	Number of possible configurations.

Configuration Descriptor

Offset	Field	Size	Value	Description
0	bLength	Byte	0x09	Size of this descriptor in bytes.
1	bDescriptorType	Byte	0x02	Configuration descriptor type.
2	wTotalLength	Word	0x0019	No. of bytes in this configuration. This includes the configuration descriptor plus all of interface and endpoint descriptors.
4	bNumInterfaces	Byte	0x01	Project SDM500 has 1 interface.
5	bConfigurationValue	Byte	0x01	Value to use as an argument to SetConfiguration() request to select this configuration.
6	iConfiguration	Byte	0x00	Index of string descriptor describing this configuration.
7	bmAttributes	Byte	0xC0	Configuration characteristics: D7 : Reserved (set to 1) D6 : Self-powered D5 : Remote wakeup D4 . . . D0 : Reserved (set to 0) (Self Powered / RemoteWakeup UnSupport)
8	MaxPower	Byte	0x31	Maximum power consumption of this configuration. (98mA)

Interface Descriptor Alternate Setting

Offset	Field	Size	Value	Description
0	bLength	Byte	0x09	Size of this descriptor in bytes.
1	bDescriptorType	Byte	0x04	Interface descriptor type.
2	bInterfaceNumber	Byte	0x00	Number of Interface.
3	bAlternateSetting	Byte	0x00	Value used to select alternate setting for the interface identified in the prior field.
4	bNumEndPoints	Byte	0x02	Number of endpoints used by this interface (excluding Endpoint 0).
5	bInterfaceClass	Byte	0x07	Class code (Printer class).

Offset	Field	Size	Value	Description
6	bInterfaceSubClass	Byte	0x01	Subclass code (Printer subclass).
7	bInterfacePotocol	Byte	0x01	Receive.
8	iInterface	Byte	0x00	Index of string descriptor describing this interface.

Endpoint 1 Descriptor

Offset	Field	Size	Value	Description
0	bLength	Byte	0x07	Size of this descriptor in bytes.
1	bDescriptorType	Byte	0x05	Interface descriptor type.
2	bEndPointAddress	Byte	0x01	This is an Out endpoint, Endpoint 1.
3	bmAttributes	Byte	0x02	This is a Bulk endpoint.
4	wMaxPacketSize	Word	0x0040	Maximum data transfer size.
6	bInterval	Byte	0x00	(This field is ignored for bulk.)

Endpoint 2 Descriptor

Offset	Field	Size	Value	Description
0	bLength	Byte	0x07	Size of this descriptor in bytes.
1	bDescriptorType	Byte	0x05	Interface descriptor type.
2	bEndPointAddress	Byte	0x82	This is an In endpoint, Endpoint 2.
3	bmAttributes	Byte	0x02	This is a Bulk endpoint.
4	wMaxPacketSize	Word	0x0040	Maximum data transfer size.
6	bInterval	Byte	0x00	(This field is ignored for bulk.)

Serial interface (option)

Your printer's optional serial interface supports the RS232C specification. The signals are received and transmitted by a 25 pin female connector.

Use a serial interface cable that meets the requirements of your host PC.

Serial attachment characteristics

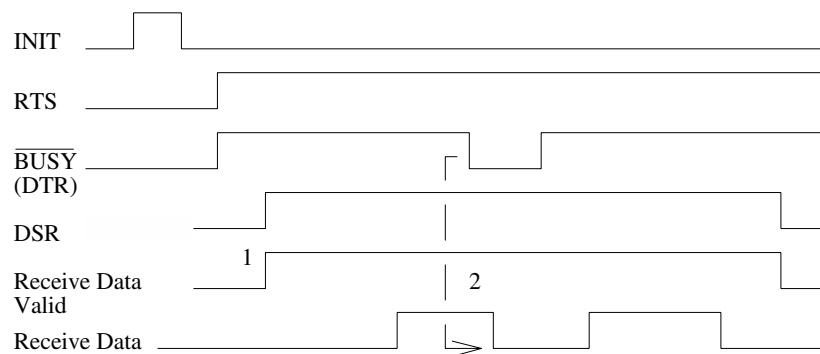
Signal Description for RS232C

Pin No.	Signal Name	Description
2	TXD (Transmit Data)	This line is for transmission of data from Printer to PC. The characteristics of the data transmitted are specified by the function menu. The only data that will be transmitted are XON (x'11') and XOFF (x'13') signals. CTS must be high for transmission to take place.
3	RXD (Receive Data)	This line is for receiving data from PC. The serial interface will not accept any data unless DSR is on.
4	RTS (Request to Send)	If user selects DTR as Busy line, this line will be set high and will remain high after the serial interface finishes its Reset. If user selects RTS as Busy line, this line will be set high after the serial interface finishes its Reset sequence. However if Ready/busy handshake protocol is selected, this line is used to indicate to PC whether or not Printer is ready to receive any more data.
5	CTS (Clear to Send)	This line will be monitored only if the XON/XOFF protocol is selected because CTS must be high in order for the serial interface to transmit data.
6	DSR (Data Set Ready)	DSR is used as another method of providing data integrity. Data will not be accepted unless DSR is high. By setting of setup menu, choice of valid / invalid is possible.
8	DCD (Data Carrier Detect)	Asserted by DCE when a connection has been established with remote equipment.
11	SSD (Supervisory Send Data)	If user selects SSD as Busy line, this line will be set high or low and will remain high or low after the serial interface finishes its Reset. If user selects SSD as Busy line, this line will be set high or low after the serial interface finishes its Reset sequence. However if Ready/busy handshake protocol is selected, this line is used to indicate to PC whether or not Printer is ready to receive any more data.

20	DTR (Data Terminal Ready)	<p>If user selects RTS as Busy line, this line will be set high and will remain high after the serial interface finishes its Reset.</p> <p>If user selects DTR as Busy line, this line will be set high after the serial interface finishes its Reset sequence. However if Ready/busy handshake protocol is selected, this line is used to indicate to PC whether or not Printer is ready to receive any more data.</p>
----	------------------------------	---

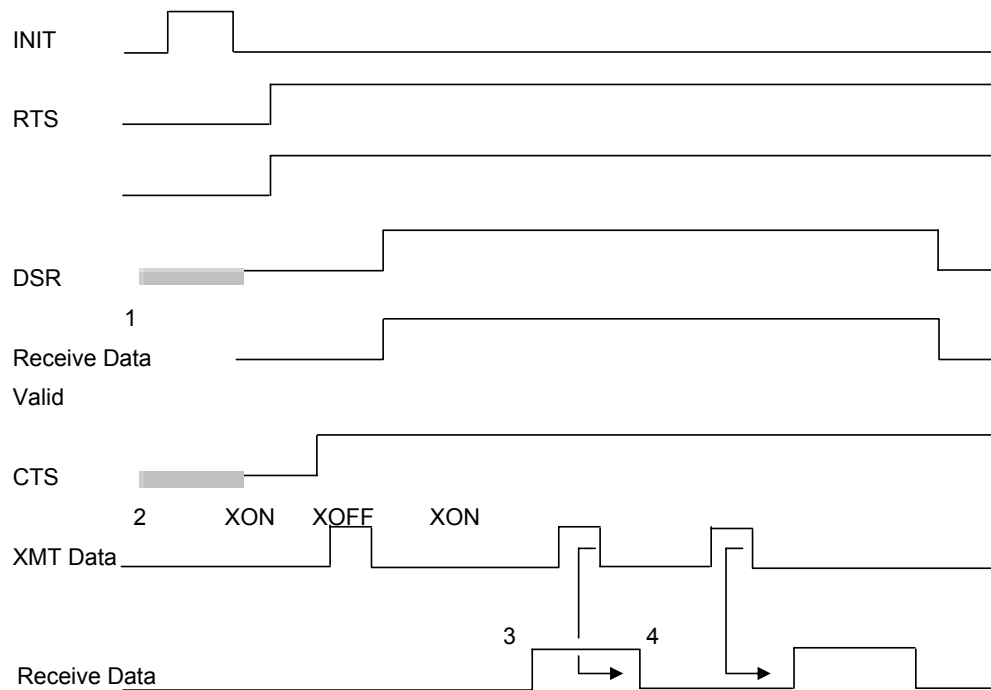
Serial Interface Timings

Ready/Busy



1. Data received when DSR is low is considered invalid and will be discarded.
2. BUSY LOW (DTR) is dropped to indicate to the host that the receive buffer is full.

XON/XOFF:



- 1** Data received when DSR is low is considered invalid and will be discarded.
- 2** CTS is required in order for the XON/XOFF protocol to work, because CTS is required in order for data transmission to occur. After Reset, when CTS is detected, an XON will be sent.
- 3** However, PC is not required to detect this initial XON before transmitting data to Printer.
- 4** Printer transmits an XOFF to indicate to PC that the receive buffer is full.
- 5** An XON will be transmitted to PC when buffer space is again available, and the printer is ready to receive more data.
- 6** And if data is sent from Host more after outputting XOFF, XOFF will be output every 16bytes receiving.

Serial Interface Error Handling

The serial interface recognizes the following errors:

- Parity Error
- Framing Error
- Buffer Overrun

Parity Errors:

When a parity error is detected, printer will indicate warning status on the lights. Printer continues to receive data.

Framing Errors:

When a framing error is detected, printer will indicate warning status on the lights. Printer continues to receive data.

Buffer Overrun Errors:

Buffer overrun errors occur when PC does not obey the selected protocol and continuous to send data when Printer cannot accept any more data. The buffer on Printer overflows if PC sends more than 1024 bytes of data after the interface signals that it is “Busy”. The result is lost data, since there is no way to make PC stop sending data. When a parity error is detected, printer will indicate warning status on the lights.

Data rates

The interface supports the following data rates.

- 4800 bps
- 9600 bps
- 19200 bps
- 38400 bps

Supported protocols

This interface will also support the following:

- 7 or 8 Data Bits
- Even, Odd, None Parity
- 1 or 2 Stop Bit(s)
- Ready/Busy or XON/XOFF handshaking

Data Transfer

A data frame consists of a start bit, seven or eight data bits, 0 or 1 parity bit(s) and 1 or 2 stop bit(s). With these combinations, 9, 10, 11 and 12 bit frames are available:



Parity

There are three possible parity settings: Even, Odd, None.

- ▶ When **Even** parity is specified, the interface expects to receive data frames with even parity and will transmit data with even parity.
- ▶ When **Odd** parity is specified, the interface expects to receive data frames with odd parity and will transmit data with odd parity.
- ▶ Parity will be checked whenever **Even** or **Odd** parity is selected. When a parity error is detected, printer will indicate warning status on the lights. Printer will continue to receive data.
- ▶ When **None** parity is specified, the interface does not accept data frames to include a parity bit, and the interface transmits data without parity bits.

Handshake

Handshaking in the serial environment is most commonly handled by software and/or hardware. The manipulation of the hardware handshaking is handled by the following 4 lines:

- ▶ RTS (Request to Send)
- ▶ CTS (Clear to Send)
- ▶ DSR (Data Set Ready)
- ▶ DTR (Data Terminal Ready)

Ready/Busy (Hardware Handshake)

When Ready/Busy protocol is selected, DTR will be used to pace the data flow from PC. When the serial interface is BUSY (Buffer is full, Printer is out of paper or an error is detected), DTR will be dropped to indicate to PC that Printer cannot receive any more data.

XON/XOFF (Software Handshake)

When XON/XOFF protocol is selected, Printer indicates to PC that it is busy and not ready to receive any more data by sending an XOFF (DC3 X'13') character. When the serial interface is ready to receive more data, an XON (DC1 X'11') will be transmitted.

Configuring the serial interface of the PC

DOS mode/Command line

To use the serial interface of your PC, you must add the following mode commands to the AUTOEXEC.BAT file:

```
mode com1:9600,n,8,1,p  
mode lpt1:= com1:
```

With the first MODE command, you configure the serial interface Com1 of your PC to the printer's factory defaults. The second MODE command redirects the parallel standard output port LPT1 of your PC to Com1.

Bits per second:	9600 bauds
Parity:	none
Data bits:	8
Stop bits:	1

These settings must be modified to use different values.

Windows 95/98

Click on the **Start** button in the Windows taskbar. Move the mouse to **Settings** and click on **Control Panel**. Click on **System**, followed by **Device Manager**. Click on **Ports**, **COM1** and **Port Settings**.

Bits per second:	9600 bauds
Data bits:	8
Parity:	none
Stop bits:	1

These settings must be modified to use different values.

Windows 2000/XP

Click on the **Start** button in the Windows taskbar. Click on **Printers** (Windows 2000) or on **Printers and Faxes** (Windows XP) to open the printer folder. In the menu bar, click on **File** and **Server Properties**. Click on **Ports**, then select **COM1** and click on **Configure**.

Bits per second:	9600 bauds
Data bits:	8
Parity:	none
Stop bits:	1

These settings must be modified to use different values.

Auto Select Interface

The printer can receive data transmitted either a parallel interface or a USB interface as standard. In addition, the printer can receive data transmitted either serial interface or Ethernet interface as option.

When two different data is sent from different PCs, one by a parallel interface and the other by a USB interface in standard, or one by a parallel interface and the other by a optional serial interface, the data reached the printer is received first and processed first and the Busy signal is sent to other interfaces (Second).

Parallel interface and Ready/Busy in Serial interface. In case of XON/XOFF in Serial interface, Printer sends XOFF to Host, if Host send data to Printer:

Other (Second) I/F	Status (during prior I/F to be activated)
Parallel (Compatible mode)	BUSY to High
USB	NAK (first 1 packet data to be received)
RS-232C (Ready/Busy)	BUSY
RS-232C (XON/XOFF)	XOFF

The printer has received all data and the receive buffer is cleared, the Busy status is cleared and the printer starts to receive the data from the other interface when the state where data are not received continues 1 seconds or more.

Command Sets

This appendix describes printer commands and their parameters.

This printer has the following resident command sets (Emulations):

- ▶ EPSON ESC/P2, IBM Proprinter X(L)24e

Select the same Emulation on the printer and in your software.

Printer basic functions

General	
I/F	USB 2.0 Full Speed IEEE1284 Nibble Mode
Emulation	IBM Pro printer XL24E EPSON ESC/P2 (T.B.D None Scalable font)
Character Set	ISO USA, ISO UK, ISO France, ISO Germany, ISO Italy, ISO Sweden, ISO Norway, ISO Spain, ISO Portugal, Epson USA , Epson France, Epson Germany, Epson UK, Epson Denmark, Epson Sweden, Epson Italy, Epson Spain, Epson Japan, Epson Norway, Epson Denmark II, Epson Spain II, Epson Latin America, Epson Korea, Epson Legal, CRO-ASCII, Arabic Farsi, Arabic Urdo, Greek DEC, Greek ELOT 928, CP437 Latin US, CP737Greek, CP850 Latin1, CP851 Greek, CP852 Latin2, CP857 Turkish, CP858 IBM with Euro, CP860 Portugal, CP861 Icelandic, CP863 French Canada, CP864 Arabic, CP864 Arab. Extended, CP865 Nordic, CP866 Cyrillic, CP866 Bulgaria, Siemens Turkish, DEC Turkish, CP1250 Win Latin2, CP1251 Win Cyrillic, CP1252 Win Latin1, CP1253 Win Greek, CP1254 Win Turkish, 8859-1 Latin1, 8859-1, Latin1(SAP), 8859-2 Latin2, 8859-5 Cyrillic, 8859-7 Greek, 8859-9 Turkish, 8859-15 Latin9(Euro) BRASCII, Abicomp, Roman 8, Coax/ Twinax(Hebrew), New-437(Hebrew)
Typeface	HS Draft, Draft, Roman, Sans Serif, Courier, OCR-B, OCR-A, Prestige, Script, Orator, Gothic, Souvenir
Printhead	24 wire
Print resolution (10cpi)	180 x 80 dpi (HS Draft) 180 x 120 dpi (Draft) 180 x 360 dpi (LQ)
Character Pitch	10, 12, 15, 17.1, 20 and 24cpi
Enchanted print	Double width , Double height ,Double strike and Italic etc.
Printing speed	480 cps (HS Draft 10cpi), 400cps (Draft 10cpi), 133cps (LQ 10cpi)
Indicator	LED
Bar code Fonts	UPC/A, UPC/E, EAN8, EAN13, Code 39, Code 128, Codabar, Interleaved 2 of 5 Industrial 2 of 5, Postnet

Options	
Interface	Ethernet RS-232C(4800, 9600, 19200, 38400 bps)

Emulation

Command list

IBM mode

The printer supports the commands shown below.

Command sequence		Function
Horizontal position control		
BS	08H	Backspace
HT	09H	Horizontal tab
CR	0DH	Carriage return
ESC BS	1BH 08H	Backspace
ESC HT	1BH 09H	Horizontal tab
ESC CR	1BH 0DH	Carriage return
ESC D	1BH 44H	Set horizontal tabs
ESC X	1BH 58H	Set horizontal margins
ESC d	1BH 64H	Relative mode inline forward
Vertical position control		
LF	0AH	Line feed
VT	0BH	Vertical tab
FF	0CH	Form feed
ESC LF	1BH 0AH	Line feed
ESC VT	1BH 0BH	Vertical tab
ESC FF	1BH 0CH	Form feed
ESC 0	1BH 30H	Select 1/8" line spacing
ESC 1	1BH 31H	Select 7/72" line spacing
ESC 2	1BH 32H	Start text line spacing
ESC 3	1BH 33H	Set graphics line spacing
ESC 4	1BH 34H	Set top of form
ESC 5	1BH 35H	Automatic line feed
ESC A	1BH 41H	Set text line spacing
ESC B	1BH 42H	Set vertical tabs
ESC C	1BH 43H	Set form length in lines
ESC C 0	1BH 43H 00H	Set form length in inches
ESC J	1BH 4AH	Graphics variable line spacing
ESC N	1BH 4EH	Set automatic perforation skip

ESC O	1BH 4FH	Cancel automatic perforation skip
ESC [\	1BH 5BH 5CH	Set vertical units
ESC]	1BH 5DH	Reverse line feed
Character attributes		
SO	0EH	Double-wide printing by line
SI	0FH	Condensed printing
DC2	12H	Select 10 cpi
DC4	14H	Cancel double-wide printing by line
ESC SO	1BH 0EH	Double-wide printing by line
ESC SI	1BH 0FH	Condensed printing
ESC DC2	1BH 12H	Select 10 cpi
ESC DC4	1BH 14H	Cancel double-wide printing by line
ESC -	1BH 2DH	Continuous underscore
ESC :	1BH 3AH	Select 12 cpi
ESC E	1BH 45H	Select emphasized mode
ESC F	1BH 46H	Cancel emphasized mode
ESC G	1BH 47H	Select double strike mode
ESC H	1BH 48H	Cancel double strike mode
ESC I	1BH 49H	Select print mode
ESC P	1BH 50H	Proportional space mode
ESC S	1BH 53H	Start subscript or superscript printing
ESC T	1BH 54H	Cancel subscript or superscript printing
ESC W	1BH 57H	Continuous double-wide printing
ESC [-	1BH 5BH 2DH	Score select
ESC [@	1BH 5BH 40H	Set presentation highlight
ESC [I	1BH 5BH 49H	Set font global
ESC [d	1BH 5BH 64H	Set print quality
ESC _	1BH 5FH	Continuous over score
Download and character code setting		
ESC 6	1BH 36H	Select character set 2
ESC 7	1BH 37H	Select character set 1
ESC =	1BH 3DH	Character font image download
ESC [T	1BH 5BH 54H	Set code page
ESC \	1BH 5CH	Print continuously from all character chart

Command sequence		Function
Bitimage		
ESC K	1BH 4BH	Normal density bit image graphics
ESC L	1BH 4CH	Dual density bit image graphics
ESC Y	1BH 59H	Dual density bit image graphics
ESC Z	1BH 5AH	High density bit image graphics
ESC [g	1BH 5BH 67H	High resolution graphics
Barcode		
ESC [f	1BH 5BH 66H	Setup barcode parameter
ESC [p	1BH 5BH 70H	Set barcode data
Others		
BEL	07H	Beeper
DC1	11H	Select printer
DC3	13H	Deselect printer
CAN	18H	Cancel Data
ESC BEL	1BH 07H	Beeper
ESC DC1	1BH 11H	Select printer
ESC DC3	1BH 13H	Deselect printer
ESC CAN	1BH 18H	Cancel data
ESC EM	1BH 19H	Set Auto Sheet Feeder Mode
ESC Q	1BH 51H	Deselect printer
ESC R	1BH 52H	Set all tabs to power on settings
ESC U	1BH 55H	Set print direction
ESC [K	1BH 5BH 4BH	Set initial condition
ESC j	1BH 6AH	Stop printing
ESC r	1BH 72H	Color selection
AGM control command		
ESC *	1BH 2AH	Select Graphics Mode
ESC 3	1BH 33H	Set graphics line spacing (n/180")
ESC A	1BH 41H	Set text line spacing (n/60")
ESC J	1BH 4AH	Graphics variable line spacing (n/180")

EPSON mode

The printer supports the commands shown below.

Command sequence		Function
Horizontal position control		
BS	08H	Backspace
HT	09H	Horizontal Tab
CR	0DH	Carriage Return
ESC \$	1BH 24H	Set Absolute Print Position
ESC D	1BH 44H	Select Horizontal Tabs
ESC Q	1BH 51H	Set Right Margin
ESC \	1BH 5CH	Set Relative Print Position
ESC a	1BH 61H	Select Justification
ESC I	1BH 6CH	Set Left Margin
Vertical position control		
LF	0AH	Line Feed
VT	0BH	Vertical Tab
FF	0CH	Form Feed
ESC (C	1BH 28H 43H	Set Page Length in Define Unit
ESC (U	1BH 28H 55H	Set Unit
ESC (V	1BH 28H 56H	Set Absolute Vertical Print Position
ESC (c	1BH 28H 63H	Set Page Format
ESC (v	1BH 28H 76H	Set Relative Vertical Print Position
ESC +	1BH 2BH	Select n/360" Line Spacing
ESC /	1BH 2FH	Select Vertical Tab Channel
ESC 0	1BH 30H	Select 1/8" Line Spacing
ESC 2	1BH 32H	Select 1/6" Line Spacing
ESC 3	1BH 33H	Set Graphics Line Spacing (n/180")
ESC A	1BH 41H	Set n/60" Line Spacing
ESC B	1BH 42H	Set Vertical Tabs
ESC C	1BH 43H	Set Page Length in Lines
ESC C 0	1BH 43H 00H	Set Page Length in Inches
ESC J	1BH 4AH	Perform n/180-inch Line Feed
ESC N	1BH 4EH	Set Skip Over Perforation
ESC O	1BH 4FH	Cancel Skip Over Perforation
ESC b	1BH 62H	Select Vertical Tabs in Channels
ESC j	1BH 6AH	Perform Reverse n/180-inch Line Feed

Command sequence		Function
Character attributes		
SO	0EH	Double-Wide Printing 1 Line
SI	0FH	Select Condensed Mode
DC2	12H	Cancel Condensed Mode
DC4	14H	Cancel Double-Wide Printing 1 Line
ESC SO	1BH 0EH	Double-Wide Printing 1 Line
ESC SI	1BH 0FH	Select Condensed Mode
ESC !	1BH 21H	Master Select
ESC (-	1BH 28H 2DH	Select Score
ESC -	1BH 2DH	Auto Underscore
ESC 4	1BH 34H	Select Italic Mode
ESC 5	1BH 35H	Cancel Italic Mode
ESC E	1BH 45H	Select Emphasized Mode
ESC F	1BH 46H	Cancel Emphasized Mode
ESC G	1BH 47H	Select Double-strike Mode
ESC H	1BH 48H	Cancel Double-strike Mode
ESC M	1BH 4DH	Select 12 cpi
ESC P	1BH 50H	Select 10 cpi
ESC S	1BH 53H	Select Subscript or Superscript Printing
ESC T	1BH 54H	Cancel Subscript or Superscript Printing
ESC W	1BH 57H	Turn Double-wide Mode On/Off
ESC X	1BH 58H	Select Font by Pitch and Point
ESC c	1BH 63H	Set Horizontal Motion Index (HMI)
ESC g	1BH 67H	Select 15 cpi
ESC k	1BH 6BH	Select Typestyle Family
ESC p	1BH 70H	Turn Proportional Mode On/Off
ESC q	1BH 71H	Select Character Style
ESC w	1BH 77H	Turn Double-high Mode On/Off
ESC x	1BH 78H	Select Letter Quality or Draft
Download and character code setting		
ESC %	1BH 25H	Select User-defined Set
ESC &	1BH 26H	Define User-Defined Characters
ESC (^	1BH 28H 5EH	Print Data as Characters
ESC 6	1BH 36H	Enable Printable Characters

Command sequence		Function
Download and character code setting		
ESC 7	1BH 37H	Enable Upper Control Codes
ESC :	1BH 3AH	Copy ROM to RAM
ESC R	1BH 52H	Select an International Character Set
ESC t	1BH 74H	Select Character Table
ESC (t	1BH 28H 74H	Assign Character Table
Graphics		
ESC (G	1BH 28H 47H	Select Graphics Mode
ESC *	1BH 2AH	Select Bit Image
ESC .	1BH 2EH	Print Raster Graphics
ESC ?	1BH 3FH	Reassign Graphics Mode
ESC K	1BH 4BH	Select Single-density Graphics Mode
ESC L	1BH 4CH	Select Double-density Graphics Mode
ESC Y	1BH 59H	Select High-speed Double-density Graphics Mode
ESC Z	1BH 5AH	Select Quadruple-Density Graphics Mode
Barcode		
ESC (B	1BH 28H 42H	Barcode Setup and Print
Others		
BEL	07H	Beeper
DC1	11H	Select Printer
DC3	13H	Deselect Printer
CAN	18H	Cancel Line
DEL	7FH	Delete Character
ESC EM	1BH 19H	Set Auto Sheet Feeder Mode
ESC SP	1BH 20H	Set Inter Character Space
ESC #	1BH 23H	Cancel MSB Control
ESC <	1BH 3CH	Select Unidirectional Mode 1 Line
ESC =	1BH 3DH	Set MSB to 0
ESC >	1BH 3EH	Set MSB to 1
ESC @	1BH 40H	Initialize Printer
ESC U	1BH 55H	Turn Unidirectional Mode On/Off
ESC r	1BH 72H	Color selection

Printer unique commands

Epson emulation

ESC DLE @ P _n A ₁ A ₂ P ₁ P ₂ P ₃ P ₄ 27 16 64 P _n A ₁ A ₂ P ₁ P ₂ P ₃ P ₄	Set multiple print positions
ESC DLE A m n ₁ ... n ₈ 27 16 65 m n ₁ ... n ₈	Select bar code type and size
ESC DLE B m n [data] 27 16 66 m n [data]	Print bar code data
ESC DLE C P ₁ [data] 27 16 67 P ₁ [data]	Print Postnet bar code data
ESC DLE G n 1 27 16 71 n 49	Set/reset raster graphics
ESC US 0 27 31 48	End double height printing
ESC US 1 27 31 49	Begin double height printing
ESC [n 27 91 n	Set line spacing to n/360"
ESC] n 27 93 n	Perform n/360" line feed
ESC i 0 27 105 48	Incremental printing off
ESC i 1 27 105 49	Incremental printing on
ESC n P _n 27 110 P _n	Select Graphics Aspect Ratio
ESC s 0 27 115 48	Half-speed printing off
ESC s 1 27 115 49	Half-speed printing on
ESC } NUL 27 125 0	Software I-Prime
ESC X p P _n L _p H _p 27 88 70 P _n L _p H _p	Select character pitch/point size 32 Points

IBM emulation

ESC DLE @ P _n A ₁ A ₂ P ₁ P ₂ P ₃ P ₄ 27 16 64 P _n A ₁ A ₂ P ₁ P ₂ P ₃ P ₄	Set multiple print positions
ESC DLE A m n ₁ ... n ₈ 27 16 65 m n ₁ ... n ₈	Select bar code type and size
ESC DLE B m n [data] 27 16 66 m n [data]	Print bar code data
ESC DLE C P ₁ [data] 27 16 67 P ₁ [data]	Print Postnet bar code data
ESC DLE F P _{no} P _n L _p H _p 27 16 70 P _{no} P _n L _p H _p	Select character pitch/point size upto 64 Points (scalable fonts)
ESC % 4 n 27 37 52 n	Perform n/360" line feed
ESC % 5 n 27 37 53 n	Perform n/144" line feed
ESC % 8 n 27 37 56 n	Set line spacing to n/360
ESC % G 27 37 71	Italic printing on
ESC % H 27 37 72	Italic printing off
ESC 8 27 56	Paper-out sensor off
ESC 9 27 57	Paper-out sensor on
ESC [I L _n H _n H _{fid} L _{fid} H _{fwd} L _{fwd} fa 27 91 108	Select font
ESC e n ₁ n ₂ 27 101 n ₁ n ₂	Set left relative position
ESC g 27 103	Select 15 cpi
ESC i 0 27 105 48	Incremental printing off
ESC i 1 27 105 49	Incremental printing on
ESC n P _n 27 110 P _n	Select Graphics Aspect Ratio: <i>PPR only</i>
ESC q n 27 113 n	Specify outline/shadow

ESC x 0 27 120 48	Select Utility print mode
ESC x 1 27 120 49	Select LQ print mode
ESC { n 27 123 n	Change emulation
ESC } NUL 27 125 0	Software I-Prime

Barcodes

IBM mode

Available barcode types

- ▶ CODABAR (NW7)
- ▶ EAN-13
- ▶ EAN-8
- ▶ CODE 39
- ▶ INDUSTRIAL 2 OF 5
- ▶ INTERLEAVED 2 OF 5
- ▶ UPC-A
- ▶ UPC-E
- ▶ POST-NET
- ▶ CODE128

Epson mode

Available barcode types

- ▶ EAN-13
- ▶ EAN-8
- ▶ INDUSTRIAL 2 OF 5
- ▶ UPC-A
- ▶ UPC-E
- ▶ CODE 39
- ▶ CODE128
- ▶ POSTNET
- ▶ CODABAR (NW7)
- ▶ INTERLEAVED 2 OF 5

Character Sets

This appendix provides character sets available for this printer. Available character sets depend on the emulation selected. They are as follows:

- IBM Proprinter X(L)24E emulation: Set 1 and set 2, codepages
- Epson-ESC/P(2) emulation: National character sets

These character sets include different characters and symbols that are in accordance with the intended languages or usages. Note that some character sets, even if they have the same character set name, may not have certain characters or symbols, depending on the resident fonts selected.

IBM Proprinter Emulation

IBM Set 1 and 2

IBM Set 1

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	NUL			0	@	P	`	p	NUL		á	||	L	ll	α	≡
1		DC1	!	1	A	Q	a	q		DC1	í	||	⊥	⌢	β	±
2		DC2	"	2	B	R	b	r		DC2	ó	||	⌢	⌢	Γ	≥
3		DC3	#	3	C	S	c	s		DC3	ú	|	⌢	ll	π	≤
4		DC4	\$	4	D	T	d	t		DC4	ñ	↓	—	⌢	Σ	∫
5			%	5	E	U	e	u			Ñ	↓	†	F	σ	J
6			&	6	F	V	f	v			®	||	⌢	π	μ	÷
7	BEL		'	7	G	W	g	w	BEL		9	π	||	||	τ	≈
8	BS	CAN	(	8	H	X	h	x	BS	CAN	¿	q	ll	†	Φ	°
9	HT	EM	)	9	I	Y	i	y	HT	EM	¬	||	ff	J	θ	•
A	LF		*	:	J	Z	j	z	LF		¬	||	ll	Γ	Ω	•
B	VT	ESC	+	;	K	[	k	{	VT	ESC	½	π	ff	■	δ	√
C	FF	FS	,	<	L	\	l	|	FF	FS	¼	ll	||	■	∞	n
D	CR		-	=	M	]	m	}	CR		i	ll	=	■	φ	²
E	SO		.	>	N	^	n	~	SO		«	↓	||	■	ε	■
F	SI		/	?	O	_	o	DEL	SI		»	↓	±	■	∩	

IBM Set 2

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	NUL			0	@	P	`	p	Ç	É	á	||	L	ll	α	≡
1		DC1	!	1	A	Q	a	q	û	æ	í	||	⊥	⌢	β	±
2		DC2	"	2	B	R	b	r	é	Æ	ó	||	⌢	⌢	Γ	≥
3		DC3	#	3	C	S	c	s	à	ô	ú	|	⌢	ll	π	≤
4		DC4	\$	4	D	T	d	t	ä	ö	ñ	↓	—	⌢	Σ	∫
5			%	5	E	U	e	u	à	ò	Ñ	↓	†	F	σ	J
6			&	6	F	V	f	v	ä	û	®	||	⌢	π	μ	÷
7	BEL		'	7	G	W	g	w	ç	ù	9	π	||	||	τ	≈
8	BS	CAN	(	8	H	X	h	x	â	ÿ	¿	q	ll	†	Φ	°
9	HT	EM	)	9	I	Y	i	y	ê	Ô	¬	||	ff	J	θ	•
A	LF		*	:	J	Z	j	z	è	Ù	¬	||	ll	Γ	Ω	•
B	VT	ESC	+	;	K	[	k	{	ï	ø	½	π	ff	■	δ	√
C	FF	FS	,	<	L	\	l	|	†	£	¼	ll	||	■	∞	n
D	CR		-	=	M	]	m	}	ı	¥	i	ll	=	■	φ	²
E	SO		.	>	N	^	n	~	Ä	Ŕ	«	↓	||	■	ε	■
F	SI		/	?	O	_	o	DEL	À	f	»	↓	±	■	∩	

Epson ESC Emulation

National Character Sets

The following fifteen character sets are available: USA, France, Germany, UK, Denmark 1, Sweden, Italy, Spain 1, Japan, Norway, Denmark 2, Spain 2, Latin America, Korea, and Legal.

Common Characters

The following table shows characters common to the fifteen “national” character sets. NR indicates characters that differ with languages.

	0	1	2	3	4	5	6	7
0			SP	0	NR	P	NR	P
1			!	1	A	Q	a	q
2			"	2	B	R	b	r
3			NR	3	C	S	c	s
4			NR	4	D	T	d	t
5		\$	%	5	E	U	e	u
6			&	6	F	V	f	v
7			'	7	G	W	g	w
8			(	8	H	X	h	x
9			)	9	I	Y	i	y
A			*	:	J	Z	j	z
B			+	;	K	NR	k	NR
C			,	<	L	NR	l	NR
D			-	=	M	NR	m	NR
E			.	>	N	NR	n	NR
F			/	?	O	-	o	

National Characters

The following table shows “national” characters that differ with languages. Character codes correspond to NRs in the preceding table.

	Character Code(Hex)											
	23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E
1:USA	#	\$	@	[	\	\]	^	`	{	|	}	~
2:FRANCE	#	\$	à	°	ç	§	^	`	é	ù	è	”
3:GERMANY	#	\$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß
4:U.K.	£	\$	@	[	\	\]	^	`	{	|	}	~
5:DENMARK	#	\$	@	Æ	Ø	Å	^	`	æ	ø	å	~
6:SWEDEN	#	¤	£	Ä	Ö	Å	Ü	é	ä	ö	å	ü
7:ITALY	#	\$	@	°	\	é	^	ù	à	ò	è	ì
8:SPAIN	℞	\$	@	í	ñ	¿	^	`	”	ñ	}	~
9:JAPAN	#	\$	@	[	¥	]	^	`	{	|	}	~
10:NORWAY	#	¤	£	Æ	Ø	Å	Ü	é	æ	ø	å	ü
11:DENMARK 2	#	\$	£	Æ	Ø	Å	Ü	é	æ	ø	å	ü
12:SPAIN 2	#	\$	á	í	ñ	¿	é	`	í	ñ	ó	ú
13:LATIN AM.	#	\$	á	í	ñ	¿	é	ü	í	ñ	ó	ú
14:KOREA	#	\$	@	[	₩	]	^	`	{	|	}	~
15:LEGAL	#	\$	§	°	'	”	¶	`	©	©	†	™

Non scalable fonts

	ID for ESC R	High Speed Draft *5	Draft	Roman	Sans Serif	Courier (incl. Courier IBM)	OCR-B	OCR-A	Prestige	Script	Orator	Gothic	Souvenir
ISO USA	42	X	X	X	X	X	X	X	X	X	X	X	X
ISO UK	41	X	X	X	X	X	X	X	X	X	X	X	X
ISO France	52	X	X	X	X	X	X	X	X	X	X	X	X
ISO Germany	4B	X	X	X	X	X	X	X	X	X	X	X	X
ISO Italy	59	X	X	X	X	X	X	X	X	X	X	X	X
ISO Sweden	48	X	X	X	X	X	X	X	X	X	X	X	X
ISO Norway	60	X	X	X	X	X	X	X	X	X	X	X	X
ISO Spain	5A	X	X	X	X	X	X	X	X	X	X	X	X
ISO Portugal	4C	X	X	X	X	X	X	X	X	X	X	X	X
Epson USA	00	X	X	X	X	X	X	X	X	X	X	X	X
Epson France	01	X	X	X	X	X	X	X	X	X	X	X	X
Epson Germany	02	X	X	X	X	X	X	X	X	X	X	X	X
Epson UK	03	X	X	X	X	X	X	X	X	X	X	X	X
Epson Denmark	04	X	X	X	X	X	X	X	X	X	X	X	X
Epson Sweden	05	X	X	X	X	X	X	X	X	X	X	X	X
Epson Italy	06	X	X	X	X	X	X	X	X	X	X	X	X
Epson Spain	07	X	X	X	X	X	X	X	X	X	X	X	X
Epson Japan	08	X	X	X	X	X	X	X	X	X	X	X	X
Epson Norway	09	X	X	X	X	X	X	X	X	X	X	X	X
Epson Denmark II	0A	X	X	X	X	X	X	X	X	X	X	X	X
Epson Spain II	0B	X	X	X	X	X	X	X	X	X	X	X	X
Epson Latin America	0C	X	X	X	X	X	X	X	X	X	X	X	X
Epson Korea	0D	X	X	X	X	X	X	X	X	X	X	X	X
Epson Legal	40	X	X	X	X	X	X	X	X	X	X	X	X
CRO-ASCII	3C	X	X	-	X	X	-	-	-	-	-	-	-
Arabic Farsi	96	-	-	*1	*1	*1	-	-	-	-	-	-	-
Arabic Urdu	97	-	-	*1	*1	*1	-	-	-	-	-	-	-
Greek DEC	46	X	X	-	X	-	-	-	-	-	-	-	-
Greek ELOT 928	6C	X	X	-	X	-	-	-	-	-	-	-	-
CP437 Latin US	80	X	X	X	X	X	X	X	X	X	X	X	X
CP737 Greek	93	X	X	-	X	-	-	-	-	-	-	-	-
CP850 Latin 1	82	X	X	X	X	X	X	X	X	X	X	X	X
CP851 Greek	88	X	X	-	X	-	-	-	-	-	-	-	-

CP852 Latin 2	87	X	X	-	X	X	-	-	-	-	-	-	-
CP857 Turkish	8D	X	X	-	X	X	-	-	-	-	-	-	-
CP858 (IBM with €)	9E	X	X	X	X	X	X	X	X	X	X	X	X
CP860 Portugal	84	X	X	X	X	X	X	X	X	X	X	X	X
CP861 Icelandic	94	X	X	X	X	X	X	X	-	-	-	-	-
CP863 French Canada	85	X	X	X	X	X	X	X	X	X	X	X	X
CP864 Arabic	8C	-	-	*1	*1	*1	-	-	-	-	-	-	-
CP864 Arab. Extended	95	-	-	*1	*1	*1	-	-	-	-	-	-	-
CP865 Nordic	86	X	X	X	X	X	X	X	X	X	X	X	X
CP866 Cyrillic	8E	X	X	-	X	X	-	-	-	-	-	-	-
CP866 Bulgaria	9D	X	X	-	X	X	-	-	-	-	-	-	-
Siemens Turkish	9B	X	X	-	X	X	-	-	-	-	-	-	-
DEC Turkish	9C	X	X	-	X	X	-	-	-	-	-	-	-
CP1250 Win Latin 2	70	X	X	-	X	X	-	-	-	-	-	-	-
CP1251 Win Cyrillic	71	X	X	-	X	X	-	-	-	-	-	-	-
CP1252 Win Latin 1	72	X	X	X	X	X	X	X	-	-	-	-	-
CP1253 Win Greek	73	X	X	-	X	-	-	-	-	-	-	-	-
CP1254 Win Turkish	74	X	X	-	X	X	-	-	-	-	-	-	-
8859-1 Latin 1	25	X	X	X	X	X	X	X	X	X	X	X	X
8859-1 Latin 1 (SAP)	2B	X	X	X	X	X	X	X	X	X	-	-	-
8859-2 Latin 2	26	X	X	-	X	X	-	-	-	-	-	-	-
8859-5 Cyrillic	2A	X	X	-	X	X	-	-	-	-	-	-	-
8859-7 Greek	2D	X	X	-	X	-	-	-	-	-	-	-	-
8859-9 Turkish	2E	X	X	-	X	X	-	-	-	-	-	-	-
8859-15 Latin 9 (Euro)	2F	X	X	X	X	X	X	X	X	X	-	-	-
BRASCII	6D	X	X	X	X	X	X	X	-	-	-	-	-
Abicomp	6E	X	X	X	X	X	X	X	-	-	-	-	-
Roman 8	4D	X	X	X	X	X	X	X	-	-	-	-	-
Coax/Twinax(Hebrew)	4F	X	X	X	X	*2	-	-	*3	*4	-	-	-
New-437 (Hebrew)	81	X	X	X	X	*2	-	-	*3	*4	-	-	-
New-DIG 850 (Hebr.)	83	X	X	X	X	*2	-	-	*3	*4	-	-	-
Old-Code 860 (Hebr.)	98	X	X	X	X	*2	-	-	*3	*4	-	-	-
Flarro 863 (Hebrew)	99	X	X	X	X	*2	-	-	*3	*4	-	-	-
Table 865 (Hebrew)	9A	X	X	X	X	*2	-	-	*3	*4	-	-	-

Notes:

- : Not supported

1: Only in 10 and 12 cpi

2: Same as Sans Serif

3: Same as Roman

4: Only in 10 cpi

5: HSD only in 10 and 12 cpi and as elongated 5 and 6 cpi

Scalable Fonts and Code Pages

SIDM scalable font T.B.D

The printer does not support all code pages in the all fonts.
See the Code page table and notes.



Note1) The Roman typeface is selected on these code pages.

Note2) The OCR-A and OCR-B typeface are available on ASCII character set and a part of character of code page 437, 850, 860, 863, 865 and 858. OCR-A and OCR-B font are not able to be printed by Euro Symbol character.

Note3) The followings code pages support scalable font.

Other code pages cancel multipoint mode and the printer set a point to 10.5 point.

Font name	PC 437	PC 850	PC 858	PC 860	PC 863	PC 865
HS Draft	-	-	-	-	-	-
Draft	-	-	-	-	-	-
Roman	o	o	o	o	o	o
Sans Serif	o	o	o	o	o	o
Courier	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1
OCR-B	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1
OCR-A	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1
Prestige	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1
Script	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1
Orator	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1
Gothic	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1
Souvenir	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1

Font name	PC 852	PC 851	PC 866 Cyrillic	8859-9 Turkish	8859-15 Latin9
HS Draft	-	-	-	-	-
Draft	-	-	-	-	-
Roman	o	o	o	o	o
Sans Serif	o	o	o	o	o
Courier	Note 1	Note 1	Note 1	Note 1	Note 1
OCR-B	Note 1	Note 1	Note 1	Note 1	Note 1
OCR-A	Note 1	Note 1	Note 1	Note 1	Note 1
Prestige	Note 1	Note 1	Note 1	Note 1	Note 1

Script	Note 1	Note 1	Note 1	Note 1	Note 1
Orator	Note 1	Note 1	Note 1	Note 1	Note 1
Gothic	Note 1	Note 1	Note 1	Note 1	Note 1
Souvenir	Note 1	Note 1	Note 1	Note 1	Note 1

Supplies and Options

This appendix lists the accessories and options available for the printer. Contact your dealer for information on ordering any of these items.

The installation of options allows you to expand the capabilities of your printer.

Supplies

Supply	Order Number
Black Ribbon Cartridge	99081
Ribbon Fabric	99002

Interface Modules

Interface	Order Number
Serial interface module, RS-232C, Sub D 25 pin-f connector	043444
Ethernet interface module 10/100 Mb/s	043445

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